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Paper TRADE JOURNAL

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VOLUME 126, No. 25 JUNE 17, 1948

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INTERNATIONAL
PAPER COMPANY
ON ITS
"50th"

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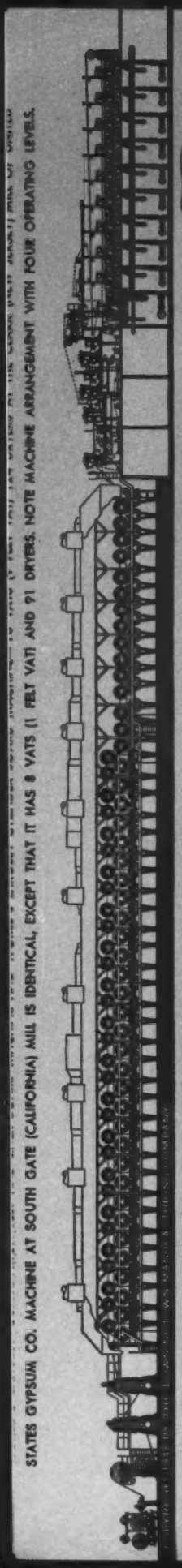
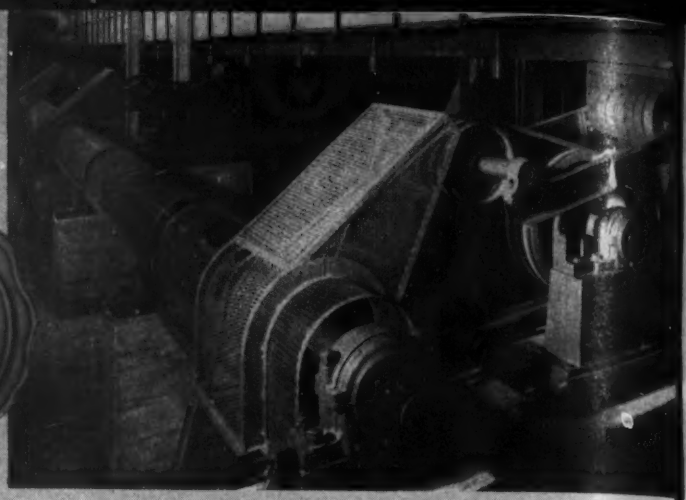


STATES GYPSUM CO. MACHINE AT SOUTH GATE (CALIFORNIA) MILL IS IDENTICAL, EXCEPT THAT IT HAS 8 VATS (1 FELT VAT) AND 91 DRYERS. NOTE MACHINE ARRANGEMENT WITH FOUR OPERATING LEVELS.



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IN THIS ISSUE

JUNE 17, 1948

Rising Waters Take Their Toll 9
Empire Section, TAPPI, Forms Metropolitan Group 10
Fires Sweep 150,000 Acres of Ontario Forests 11
Improvements, $46 Million—International Paper 12
Dill & Collins Machines To Shut Down 14
Paper Duty Classifications 14
Wisconsin Reforestation Acceleration Urged. 18
Paper Industry Safety Progressing 18
NAWMD Organizes To Improve Relations With Foreign Buyers 20
Boston Paper Trade Ass'n. Holds Lively Outing 20
Senate Approves Flood Control Funds 24
OBITUARY 28
LETTERS 28
Contract Dickering Continues 30
TRENDS 36
IMPORTS 38
PRICES 40
MARKETS 42
FINANCE 44
PRODUCTION RATIO REPORT 46
The Paper Outlook 48
INDUSTRIAL DEVELOPMENT 53
Some New Thoughts Regarding the Cylinder Machine 53
Some Modern Concepts of Stock Preparation 56
Economical Debarking of Wood, Two New Debarking Machines 59
EQUIPMENT AND SUPPLIES 61
TAPPI SECTION 65
Effect of Petroleum Base Additives on Sulphite Pulping and Papermaking 65
Composition Changes Occurring During Vacuum Evaporation, Steam Stripping, and Deashing of Ammonium Sulphite Waste Liquors 70
CLASSIFIED ADVERTISING 76

INDEX TO ADVERTISEMENTS ON PAGE 90

Volume 126 **Number 25**

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

Executive and Editorial Offices: 15 W. 47th St., New York 19, New York
Published Every Thursday by Lockwood Trade Journal Co., Inc.

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Subscriptions: (Payable in advance) By the year, $5.00; Single Copy, 15 Cents. *Postage Extra: To Canada,* $2.00; *To Other Foreign Countries,* $3.50. Member Audit Bureau of Circulation.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL, *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL, *Feb. 19, 1926. All rights to the above titles reserved.*

PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*

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PAPER TRADE JOURNAL *is indexed in Industrial Arts Index.*

CALENDAR OF COMING EVENTS

JUNE 22: "Fun Day" Kalamazoo Valley Section, TAPPI. Gull Lake Country Club. For details write to Don Militzer, 3519 Hoover Street, Kalamazoo 38, Mich.

JUNE 24-26—Wisconsin Power Conference and Exposition. Northland Hotel, Green Bay, Wis. For details, write to Al DeGroot, conference secretary, 515 North Irwin avenue, Green Bay, Wis.

JUNE 25-26: Maine-New Hampshire Section, Technical Ass'n., of the Pulp & Paper Industry. Belgrade Lake House, Belgrade Lake, Mo. For hotel reservations, address hotel.

OCTOBER 12-16: Fifth National Chemical Exposition, Coliseum, Chicago, Ill. For details, write to Marcus W. Hinson, manager, care of Chicago Section, American Chemical Society, 1505 South Wabash avenue, Chicago 5.

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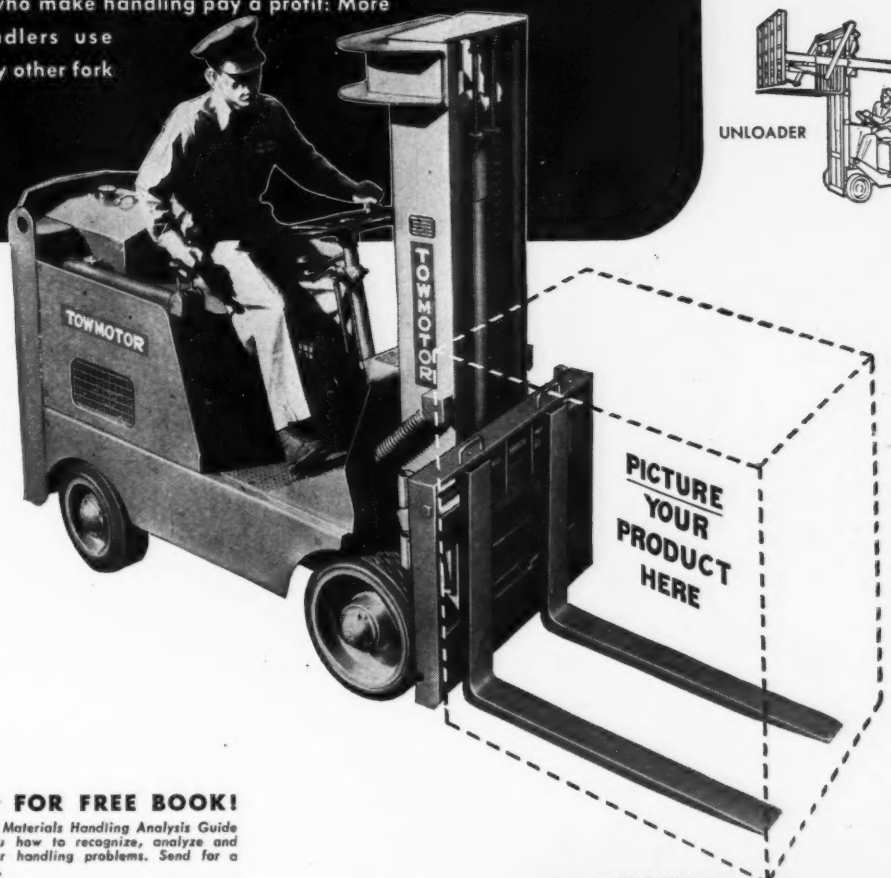

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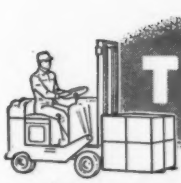

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In this 100th anniversary year as Machine Builders for the Paper Industry, Puseyjones points with pride to outstanding post-war installations. In the spotlight . . . 154" Fourdrinier Facial Tissue Machine for Groveton Papers Co., Groveton, N. H.

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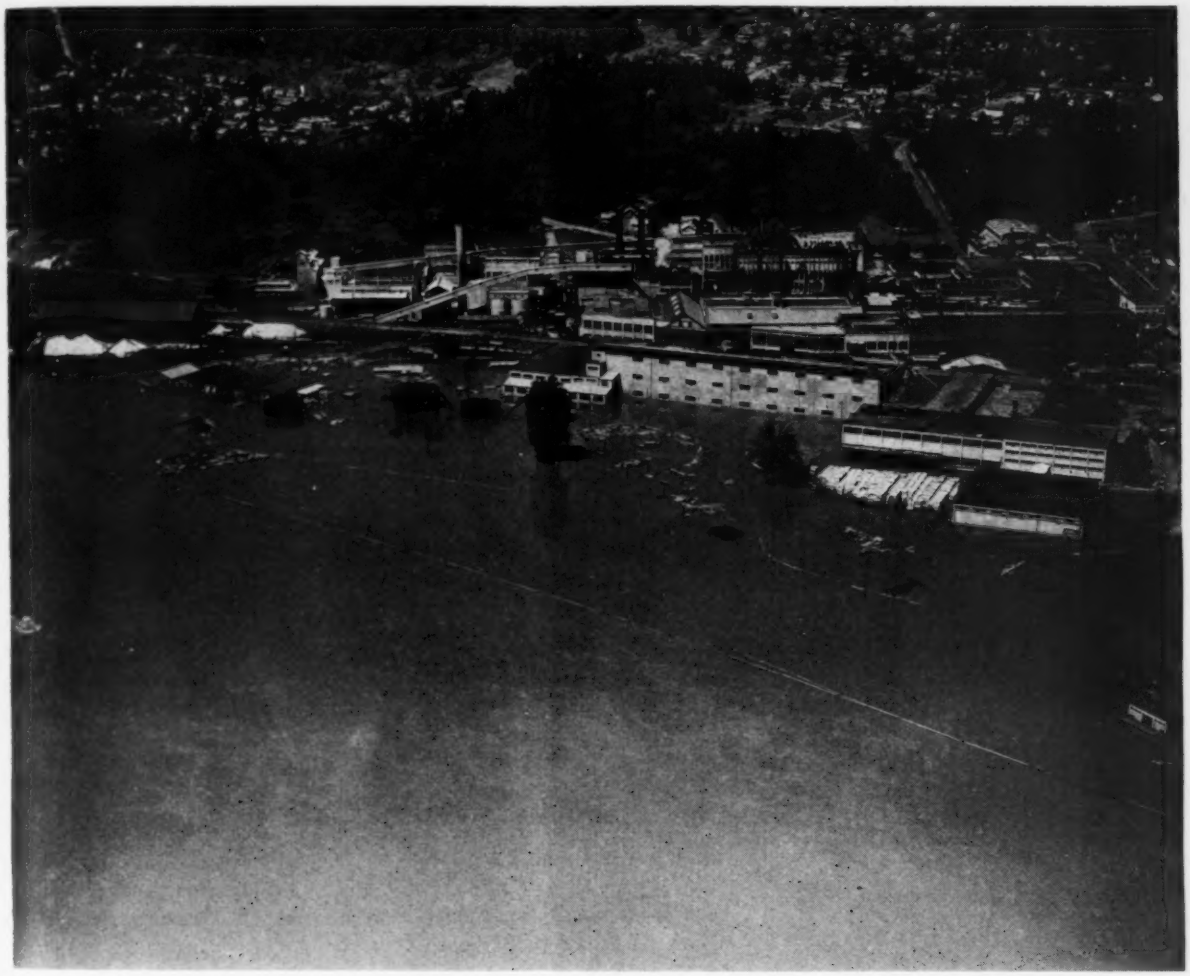
Paper TRADE JOURNAL

VOL. 126, NO. 25 REG. U.S. PAT. OFF. JUNE 17, 1948



FRANK N. YOUNGMAN, vice-president of the Crown Zellerbach Corp., airmailed "Paper Trade Journal" this interesting aerial photo of his firm's Camas, Wash., mill as it appeared at the height of the recent flood. . . . On June 7 Mr. Youngman wired: "With the exception of one machine, our Camas mill has been completely down for ten days and will remain down another week or ten days, depending upon river stage. We lost approximately three mill feet of logs from storage, although a substantial portion may be salvaged later. Main damage to plant will consist primarily of clean-up, painting, electrical connections, etc. All paper and supplies removed from lower levels before high water reached them."

Rising Waters Take Their Toll

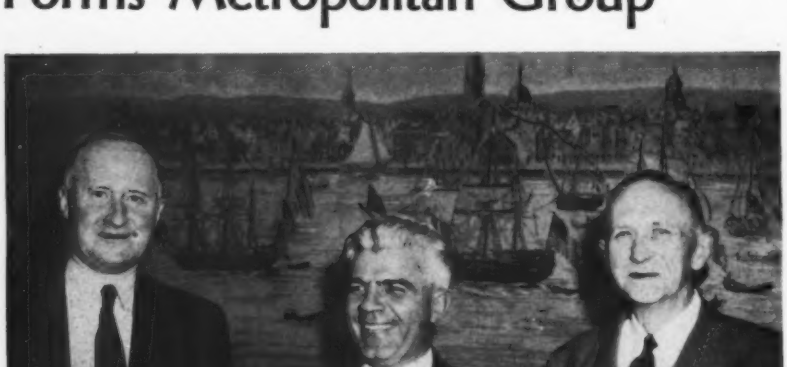
Acknowledgements are due a number of paper mill executives in the Northwest who wired responses to *Paper Trade Journal's* flood survey, published on Page 7 of the June 10 issue. Their names were omitted from their telegrams as published in that issue, due to the rush of going to press.

To these gentlemen, the publisher takes this opportunity to express sincere thanks for their helpful, timely and constructive cooperation. They include: Frank N. Youngman, vice-president, Crown Zellerbach Corp., Portland, Ore.; P. T. Sinclair of the same organization's Oregon City, Ore., properties; M. J. Otis of the C Z Port Angeles, Wash., mill; and F. L. Ziel of its Port Townsend, Wash., operations.

Also, Nils G. Teren of the Columbia River Paper Mills, Portland, Ore.; C. Wylie Smith, vice-president and general manager, Coos Bay Pulp Corp., North Bend, Ore.; Carl E. Braund, vice-president and mill manager, Hawley Pulp & Paper Co., Oregon City, Ore.; C. A. Buckland, Inland Empire Paper Co., Spokane, Wash.; E. E. Flood, Pacific Paperboard Co., Longview, Wash.; R. M. Cooper, president manager, Powell River Co., Ltd., Powell River, B. C.; Russell De Lopez,

(Continued on page 46)

Empire Section, TAPPI, Forms Metropolitan Group



Left to right—R. G. McDonald, executive secretary of TAPPI; W. F. Gillespie, technical director, Gaylord Container Co., Bogalusa, La.; and K. P. Geohegan, technical director, Aetna Division, Howard Paper Mills Co., Dayton, Ohio.

NEW YORK—The Metropolitan Group of the Empire State Section of the Technical Ass'n., of the Pulp & Paper Industry was formally organized at a meeting of about 70 TAPPI members at Fraunce's Tavern the evening of June 8.

Officers of the group were elected as follows: John Calkin, Union Bag & Paper Corp., chairman; Lewis Reid, Metropolitan Life Insurance Co., vice-chairman; and Henry Perry of Frederic C. Clark Associates, secretary-treasurer.

After the election of officers, short talks were made by Messrs. Calkin, Reid, Perry, Willets, R. G. McDonald and Kenneth Geohegan.

Most of the preliminary organization work was done by Mr. Perry and a steering committee composed of William R. Willets of the Titanium Pigment Corp.; Ralph Kumler of the American Cyanamid Co., Richard W. Porter of the McGraw-Hill Publishing Co.; J. F. Butterworth of the Socony-Vacuum Oil and J. W. Hemphill of the Johns-Manville Co.

Before the first meeting was called, a questionnaire was sent out to all members of TAPPI within 50 miles of New York City, Replies showed that more than 200 members favored organization of the Metropolitan group. About 100 have already joined. The majority wish to have monthly meetings from September to June. It is expected that beginning next fall regular monthly meetings will be held at Fraunce's Tavern.

Left to right—John Calkin, technical assistant to president, Union Bag & Paper Corp.; Lewis Reed, senior paper technician, Metropolitan Life Insurance Co.; and Henry Perry, engineer, Frederic C. Clark Associates, all of New York City.

N. Y. Pulpmen Golf

NEW YORK—The 26th annual tournament of the New York Pulpmen's Golf Ass'n., at Winged Foot Golf Club, Mamaroneck, N. Y., June 8, attracted a large attendance and proved to be enjoyable and successful from every angle.

Top men of the day's competition were Edmund E. Barrett, of the Powell River Sales Corp. (low net 73 for 18 holes), and Edward B. Vaughan, of Bulkley-Dunton Pulp Co. (low net 110 for 27 holes).

The committee in charge of the tourney, consisting of Roger Egan, president; William Flohr, vice-president, and Donald A. Fraser, secretary-treasurer of the Association, went all out in providing the entertainment which followed the gala dinner in the evening.

Prior to the start of the floor show an all-pulp-trade quartet, comprised of Carlton Overton, Tim Overton, Fred Enders and Ed Vaughan sang so pleasingly that the crowd didn't want to let them stop.

President Roger Egan presided in the awarding of prizes, and it was announced that William Flohr, of Parsons & Whittemore, had been elected president of the Association for the next year to succeed Mr. Egan; Donald A. Fraser, of the Fraser Companies, would succeed Mr. Flohr as vice-president, and Seymour W. Hollister, of Mead Sales, had been elected secretary-treasurer.

Among those in attendance were: Roger Egan, Fred Enders, Elmer J. Rose, Edward B. Vaughan, Howard A. Pratt, Robert H. Greene and Stephen Goerl, of the Bulkley-Dunton Pulp Co., Inc.; Carlton B. Overton, Timothy M. Overton, Johannes Westergaard, A. E. Oliphant, C. R. O'Neill and Cath Bang, of Castle & Overton, Inc.; Gunnar T. Hansson, T. R. Wilbert, Olaf Neilson, Jr., Charles Mueller, Nils Odquist, and George V. Johnson, Jr., of Elof Hansson, Inc.; Orval A. Wales, Harry D. Eliason, Harrison Starr, G. F. Demonet, G. H. Peterson and Bror E. Lindell, of the Cellulose Sales Co., Inc.; Harry A. Hughes, Harry W. Draudt, M. H. Randall and Fred van Streain, of Price & Pierce, Ltd.; L. K. Larson, Gordon W. Brown and H. F. Bigelow, of the Pulp Division of the Weyerhaeuser Timber Co.

Donald A. Fraser and C. M. Matheson, of the Fraser Companies, Ltd.; Robert J. Burke, Seymour W. Hollister, Allan Patton and Davis Brittain, of the Mead Sales Co., Inc., and Rolf G. Westad, of the Borregaard Co., Inc.; Albert Blattmann, of Pagel, Horton & Co., Inc.; Samuel Dauman, of Gottesman & Co., Inc.; William Flohr, of Parsons & Whittemore, Inc.; Alfred Bunge, of the Alfred Bunge Co.; and Downing P. Brown, J. J. McDonald, Harold S. Chellis and M. A. Hescock, of the Brown Co.

S. G. Blankinship, of the Perkins-Goodwin Co.; Reginald L. Vayo, and William McNair, of the St. Regis Sales Corp.; Russell McCandless, of

the Regent Pulp & Chemical Co., Inc.; Edmund E. Barrett and R. G. McHugh, of the Powell River Sales Corp.; C. H. Champion, of R. T. Vanderbilt & Co.; William H. Anders, of the Nashua River Paper Co.; P. M. Loddengaard, of the United Board & Carton Co.; E. J. Thom and Peter L. MacDougall, of the Howard Smith Paper Mills, Ltd.; and James W. Paton, of the St. Lawrence Paper Mills, Ltd.

World Bank Puts Out Technical Aid Feelers

WASHINGTON — Inquiries have been sent to Finland, and other wood-producing European countries by the World Bank to learn if they would welcome a technical mission to determine their needs for sawmill, and other timber industry equipment designed to stimulate output of timber products.

A subcommittee of the Economic Commission for Europe recently reported that if Finland, Poland, Czechoslovakia, and certain other countries had such additional equipment, it would assist in producing more timber and related products for the United Kingtom and other countries importing such commodities.

The World Bank, to which the report was addressed, is stated to be studying the suggestion, but has taken no action pending further indications from the countries concerned that they would be interested in such equipment.

North Carolina Boosts Pulpwood Intrastate Rates

RALEIGH, N. C.—The State Utilities Commission has awarded railroads another increase — a 20 percent addition to their intrastate rates for pulpwood.

The North Carolina pulpwood and paper industry, which formerly paid $18.60 per carload for a typical 90-mile rail haul, now will be charged $22.32.

The commission's latest order chiefly affects four mills: those of the Mead Corp. at Sylva, Champion Paper & Fiber Co., Canton, Halifax Paper Co., Roanoke Rapids and North Carolina Pulp Co., Plymouth.

Commission attaches said North Carolina's pulpwood rates were set in 1905 and have remained virtually unchanged for the past 43 years.

AP & PA Statistical Summary Available To Public

NEW YORK—The Monthly Statistical Summary of the American Paper & Pulp Ass'n. is now open to public subscription, E. W. Tinker, executive secretary, announced on June 11. The Summary carries statistical tabulations of production, orders, stocks on hand, shipments and sales reported by members of the Divisional Associations of the Association. In addition wood pulp and other fiber supplies and pulpwood statistics are given. Annual subscription is $10.

Fires Sweep 150,000 Acres of Ontario Forests

TORONTO, Ont.—Within recent days Ontario experienced one of the worst forest fires in its history. Nine fires were reported in the northwest corner of the province, mostly east and north from Sault Ste. Marie. The Missassagi district is one of the hardest hit, while fires of smaller extent are reported from as far east as Cochrane. By June 3 the Missassagi fire had burned over 50,000 acres and the Chapleau blaze had destroyed another 45,000 acres of timber. Other fires were reported from Helen Lake in the Port Arthur district, covering 7,000 acres and another at Gull Bay on the west coast of Lake Nipigon covering 5,000 acres. Thousands of men and all the equipment available on the job 24 hours a day, but in spite of their best efforts they were losing the battle as the fires continued to spread. Experienced foresters were emphatic that only a steady rain of considerable duration would stop the conflagrations. Southern Ontario had such a rain on the night of June 4 but the meteorological bureau at Malton, near Toronto, reported the opinion that there was insufficient rain to have much effect on the fires.

Lack of all-weather roads through forest areas and presence of large amounts of bud-worm-killed trees were blamed as contributing factors to the rapid spread of the forest fire north of Blind River by John C. W. Irwin, secretary and editor of "Save the Forests League, Inc." Without roads to take them to strategic points, fire fighters are greatly handicapped in efforts to stop the flames from spreading, Mr. Irwin said. About 30,000 to 40,000 square miles of forest in Ontario are affected by the budworm, he said.

Eight miles west of Long Lac, at Suckle Lake, a 1,600-acre fire burned out a smal pulp camp. Also in the Geraldton district, at Martinette Lake, 15 miles north of the new town of Marathon, a fire covering 2,000 acres was burning in an area where about 75 per cent of the wood is pulpwood slash and the rest standing pulpwood. A 6,000-acre fire is reported in Grenfell township. Kirkland Lake area, and in the same township, near Timmins, another 4,000 acres were burning.

While the fire in Gogama district in 1941 was greater in extent than any one of the areas now affected, it is probable that total destruction to date this year will exceed that of any other year in Ontario's long history of forest fires.

Lightning started eight new forest fires in the Mississagi and Chapleau areas on June 4, but forest rangers said they were within the lines established to contain the two big blazes which started last week and have burned 125,000 acres. Five more fires were started by lightning in the Kenora area.

More than 30 pulp and paper camps in the Geraldton area suspended cutting operations and all workers were confined to their camps by forest rangers. Two forest fires, one 30 miles due south of Geraldton, at Martinet Lake, and the second 35 miles west, at Sturgeon Lake, forced a ban on movement on roads through the bush country, the rangers report. The foresters conscripted pulp workers to help patrol the roads. Light rains had little effect on the fires, which stretched 72 miles along an eastern front in the Mississagi-Chapleau area where the two largest fires joined near Peshu Lake, fanned by a 15-mile-an-hour wind from the northwest. This devastated area covers an estimated 150,000 acres.

Work Week Reduced In Some Holyoke Mills

HOLYOKE, Mass.—Some local paper mills have reduced their work week to three or four days, the Massachusetts Division of Employment Security, disclosed in its monthly newsletter on industrial conditions here, released June 7.

"During April," said the *State Newsletter*, "many local paper mills cut back production and are now operating on three to four-day work weeks. The demand for stationery and greeting cards has picked up and manufacturers are expanding their work forces to fill seasonal orders now coming in.

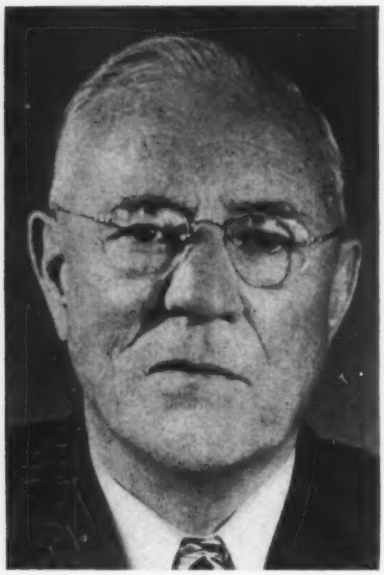
"The cut in operations in the papercaking industry is attributed, in large measure, to the sharp decline in foreign business, which has constituted as much as 30 percent of the gross volumes of some mills.

"Plants producing coarse paper for boxes and packing containers have not been affected; their product continues in great demand. Seasonal stationery and greeting card manufacturers have started on Christmas orders, and are hiring young women for sorting and packing occupations."

Keep FLS Records Only Three Years

WASHINGTON—Employers will be required to preserve records under the Fair Labor Standards Act three years, instead of four, effective July 1, 1948, under a relaxation of record-keeping regulations adopted June 8. The change does not affect the requirement as to such basic records as time-cards and similar working records, which are retained only two years.

Improvements, $46 Million—International Paper



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Chairman of the Board

JOHN H. HINMAN
President

HARRISON R. WEAVER
First Vice-President

NEW YORK—International Paper Co., which this week is celebrating its 50th anniversary, made public on June 12 details of its $46,000,000 expansion and modernization program during 1947-49 to improve its mills and plants in 11 southern and three northeastern states.

Joint disclosure of the details was made by John H. Hinman, president of the company, and J. H. Friend, vice-president in charge of the Southern Kraft Division, with headquarters in Mobile.

More than $6,000,000 has been allocated for improvement of the company's six mills in New York, Maine, and Pennsylvania, while about $40,000,000 is being spent in the eight mills and one converting plant comprising the Southern Kraft Division. The company will meet these expenditures without borrowing any money or issuing any additional capital stock, it is stated.

Northern Facilities

Mr. Hinman also made public for the first time details of the expansion program as it applies to each of the six mills. These are summarized as follows:

Hudson River Mill—Equipping one papermaking machine to coat paper in a continuous operation. The process adds a stage to the Fourdrinier machine to coat both sides of the paper with a clay solution after it is dried but before it is calendered and super-calendered. A new finishing room building complete with finishing equipment has just been installed. By the end of the year virtually all of the sulphite pulp manufactured at Hudson River will be bleached, when a large addition to the bleach plant is completed. The plant making Bindarene, an industrial by-product of papermaking, will be improved with new dryers and related equipment.

Otis Mill—A filtration plant is being completed to remove dirt and organic matter from water drawn from the Androscoggin River. Object of the improvement is to obtain cleaner pulp. Otis also has gained from additions to the groundwood bleach plant, installation of a waste-burning boiler, making for a fuller use of forest products, the addition of equipment for the production of super-calendered papers and changes to the papermaking machines and auxiliary equipment to increase efficiency and to improve quality.

Niagara Falls Mill—One of the major jobs is installation of a pulp storage building which will increase inside storage capacity of the mill by 6,000 tons of baled and lapped pulp. The building will be equipped with overhead cranes and conveyors which, with equipment changes such as the installation of several hydrapulpers, will thoroughly modernize the handling of pulp and other raw materials. A high-pressure boiler (capacity, 60,000 lbs. of steam per hour) is being installed. Improved methods of manufacturing pulp from waste magazine papers by more efficient disintegration, de-inking, washing and bleaching are being adopted. New pulp refining equipment, together with major changes to the "wet" end of the paper machines, round out the improvement program.

Ticonderoga Mill — A six-ton digester will bring Ticonderoga into better balance, so that it will have to bring in less of the pulp it needs to make its many paper specialties. At the same time the liquor-making equipment and buildings are being enlarged to take care of the additional pulp capacity. Three high-pressure boilers are being installed, each having a capacity of 60,000 pounds of steam per hour, which with the new recovery boiler recently put into service and with a new 4,000-kw steam turbine, will completely modernize Ticonderoga's steam and power plants. A Cottrell electronic precipitator is being installed in conjunction with the new recovery boiler. Vacuum savealls are being installed to produce a virtually "closed" white water system resulting in a considerable saving in fibre and clay. Changes and improvements in the beater room and on the paper machines are being completed.

Tonawanda Mill—A major improvement of the earlier postwar program was installation of a high-pressure recovery boiler with a capacity for handling the liquor from 100 tons of pulp. This replaced three rotary incinerators which had a combined capacity of about 80 tons daily.

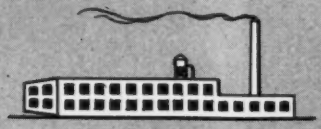
A high-pressure, spreader-type, stoker boiler has also been added to the main boler house.

Quintuple-effect vacuum evaporators have been installed in the pulp mill for use in conjunction with the recovery boiler.

Beaters, paper machine screens, and

(Continued on page 32)

400 PAPER MILLS



are running 1200

VICKERY FELT CONDITIONERS

Four hundred papermakers can't be wrong.

They have averaged *two* repeat orders for every initial Conditioner installation because keeping press felts continuously clean and open means

- **more paper per day** — no mid-week shut-downs for felt wash-ups
- **better paper** — uniformly clean, absorbent felts result in uniform finish and uniform moisture content as the sheet leaves the press
- **lower cost per ton** — maximum water removal at the presses saves steam — increased machine output reduces unit production cost.

New "Jordan" Type Conditioner Box is proving extraordinarily popular for use on high speed machines or when Conditioners are installed on more or less vertical up runs. It offers many advantages and savings — may be applied to Conditioners now in operation.

Let us tell you more about it.

SEND FOR NEW BULLETIN giving the whole story on the Vickery Felt Conditioner, what it does and how it works.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Dill & Collins Machines To Shut Down

PHILADELPHIA—The Mead Corp., disclosed on June 10 that paper manufacturing operations in its Dill & Collins division here will be discontinued early in August.

Three paper machines are to be dismantled and the manufacture of raw stock and uncoated grades will be transferred to other Mead mills better equipped to produce them, a company spokesman said. The coating mill, however, will remain in operation on the site under the continued direction of J. D. Davis, general manager.

Shutdown of the paper making machines was dictated by economic necessity, a corporation spokesman pointed out, explaining that the paper machines are obsolete and no longer can they be operated profitably.

Originally, the corporation intended to rebuild the old mill completely, but the war intervened and conditions since have forced indefinite postponement of reconstruction.

Present plans contemplate an increase in the production of coated paper. Warehouse facilities will be improved through acquisition of space formerly used for raw material storage. A larger and more diversified finished paper inventory will be maintained at the warehouse.

The Dill & Collins mill has about 700 employes. Some 300 will be retained and the company will endeavor to aid those laid off to find other work. Some will be offered employment in Mead mills in Chillicothe, O.; Kingsport, Tenn.; Leominster, Mass., and Buena Vista, Va.

The Dill & Collins mill traces back to the first paper mill in America, built in 1690 by William Rittenhouse. The Rittenhouse mill, located in what is now Philadelphia's Fairmount Park, was destroyed by a freshet in 1701 and rebuilt in 1702. It was purchased in 1853 by Charles Megarge, and in 1879 Megarge sold his interest to Alexander Balfour who, in 1882, built the Delaware Paper Mill on the Delaware River near Richmond and Tioga streets. This mill was sold in 1895 to Dill & Collins. The Mead Corp. acquired it in 1932.

Foreign Trade of Five Nations Reported

WASHINGTON—Foreign trade in paper and paper products, as reported from various importing and exporting sources abroad, on June 12 shows the following:

Austria — Paper and paper products exported in 1947, as follows: wood pulp, 9,314 metric tons; paper, 35,515 metric tons; paperboard, 10,143 metric tons; paper products, 1,569.

Portugal — Wood pulp imported in the first 9 months of 1947 totaled 9,045 metric tons, compared with 11,507 in the same period of the previous year.

Kenya, B.E.A.—Exports of soda ash rose to 61,774 tons in the first 9 months of 1947, from 58,300 tons the previous year for the same months.

Iraq—Paper imports from the United States amounted to 1,423 short tons in 1947, in addition to 31 tons of paperboard and 60 tons of wallboard.

Czechoslovakia — Exports of chemical and other wood pulp totaled 41,810 tons in the first nine months of 1947, the latest figures reported. Paper and paperboard exports in the same period were 32,673 tons. The total value of Czechoslovakia's paper and related products exported in those months represented 3.5 percent of the value of all exports in the same period. Imports in the period reported included chemical pulp, 1,957 tons; paper and paperboard, 2,817 tons, and paper products, 68 tons.

Wisconsin River Valley Wants Rain

WAUSAU, Wis.—Subnormal rainfall has resulted in a further depletion of the Wisconsin river reservoirs of the Wisconsin Valley Improvement Co. There was a loss of 924,000,000 cubic feet of water. during the week preceding Sunday, June 6, and on that day water reserves had dropped to 56.15 percent compared with 67.32 percent of capacity on May 16. Total storage on June 6 was 9,555,000,000 cubic feet, as compared to 15,701,000,000 cubic feet on the same date in 1947 and 9,412,000,000 cubic feet on that date in 1947. The Eau Pleine reservoir, with a capacity of 4,551,000,000 cubic feet, contained 2,910,000,000 cubic feet of water June 6.

The Wood county board of supervisors on June 9 approved a proposal to make $1,000 available to its conserbation and forestry committee for improvement of fire lanes in county forests. At the committee's discretion, it can order the lanes plowed and disced. They are heavily covered with dry grass and other inflammable vegetation. The situation is serious because of recent lack of rainfall.

ASTM 1948-49 Slate

PHILADELPHIA — Officers nominated by the American Society of Testing Materials for 1948-49, to be voted upon at the election at the 51st annual meeting of ASTM in Detroit on June 21 are:

Richard L. Templin, president; L. J. Markwart, vice-president (two-year term); and the following directors: Leslie C. Beard, Jr., Simon Collier, Theodore P. Dresser, Jr., Howard K. Nason, and Edgar W. Fasig (three-year terms).

Mr. Templin is assistant director of research and chief engineer of tests of the Aluminum Co. of America, New Kensington, Pa.; Mr. Markwardt is assistant director of the U. S. Forest Products Laboratory, Madison, Wis.; Mr. Beard is chemist and assistant director for laboratories of the Socony-Vacuum Oil Co., Inc., New York; Mr. Collier is director of quality of the Johns-Manville Corp., New York; Mr. Dresser is chief engineer of Abbot A. Hanks, Inc., San Francisco, Calif.; Mr. Nason is associate director of the central research department of the Monsanto Chemical Co., Dayton, Ohio, and Mr. Fasig, general superintendent of the Lowe Brothers Co., Dayton, Ohio.

Paper Duty Classifications

NEW YORK—Customs officials have taken action on a number of importations of special papers in which reduced rates of duty are effected by the Geneva Reciprocal Trade Agreements.

Some of these cases as reported by Warren B. Bullock, Manager of the Import Committee of the American Paper Industry were:

Serviettes from Sweden have been classified for duty as paper with a printed design.

Creped paper napkins with printed design have been classified for duty as manufactures of paper at 35 percent, but not less than the crepe paper rate of 3 cents per pound and 7½ percent.

Imitation leather board, made of leather scrap, known as Salka, was classified for duty at the rate for leather material, not at the lower rate for fibre boards.

Flame-proof draperies have been classified as paper with printed design, and not admitted at the claimed lower rate for wallpaper.

Imitation cork gummed cigarette tips have been classified for duty as gummed paper at 5 cents per pound, and not at the higher rate for coated paper or 2½ cents per pound and 7½ percent.

Laminated paper with one layer corrugated have been classified for duty as paper not specially provided for, and not at the lower claimed rate for wrapping paper.

The U. S. Customs Court has again ruled that the manner in which prices of kraft paper are controlled in Sweden exempts such paper from duty based on the price in the country of origin, and allows the computation of duty at the actual export price, materially below the Swedish home market price. The decision involved seven shipments of kraft to Jacksonville in 1938.

How important is Leakage?

NEW! Paper drinking cup makers and producers of similar types of food containers have successfully tested CUP-SEAM — a new Resyn* adhesive that is highly water resistant and able to withstand contact with both hot and cold liquids for a prolonged time without leakage.

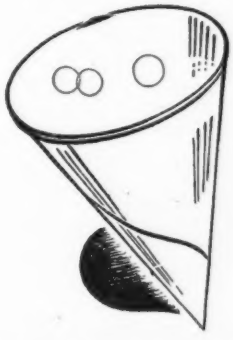
CUP-SEAM has been acclaimed with unusual enthusiasm after months of field usage. It is a white emulsion that dries to a clean, colorless film. It is odorless . . . free from solvents . . . non-toxic.

CUP-SEAM has been tested on regular equipment at high speeds. It has excellent machineability . . . is quick tacking, fast drying, non-staining . . . has a bonding strength that exceeds that of the paper. Yet, its film flexes as easily as the paper it bonds.

CUP-SEAM — which seals liquids *out* as well as *in* — is now in full supply ready for immediate and steadily maintained deliveries.

*®

Offices: 270 Madison Avenue, NEW YORK 16; 3641 Washtenaw Ave., CHICAGO 32; 735 Battery Street, SAN FRANCISCO 11; and other principal cities. IN CANADA: Meredith, Simmons & Co., Ltd., Toronto and Montreal. IN ENGLAND: National Adhesives, Ltd., Slough.



National ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

Wisconsin Reforestation Acceleration Urged

WISCONSIN RAPIDS, Wis.—Representatives of the paper, lumbering and allied industries agreed here at a conference with State Conservation Department officials on June 9 that Wisconsin's reforestation program must be accelerated.

The paper industry representatives were particularly insistent that prompt and decisive measures be taken to assure future supplies of raw material.

"Back in 1928," D. C. Everest, president and general manager of the Marathon Corp., Wausau, said, "a conference similar to this one was held. The speeches made were the same as those here today. But nobody did anything."

He said that the state had lost a quarter of a century in protecting the raw material supplies of the industry and added that constructive action must be taken, even if it calls for additional taxes. The forest conservation program has been mishandled in its pulpwood supply aspects, Mr. Everest asserted, laying the blame for this on industry and legislature alike. He praised the Trees For Tomorrow program but said that recently there had not been enough trees to plant.

Mr. Everest explained that paper companies have invested capital equal to $75,000 for each ton of daily paper production because they are "betting on perpetuity." Today, however, local sources of pulpwood have been virtually exhausted, and manufacturers are importing from Montana, Canada and other distant points at prohibitive freight rates.

Mr. Everest said that timber is the only replaceable natural resource which Wisconsin enjoys.

Stanton W. Mead, Wisconsin Rapids, vice-president of the Consolidated Water Power & Paper Co., also stressed the inadequate supply of seedlings. He said that wastelands won't be reforested without help and urged the conservation department to increase its production to meet the needs of both public and private planters. He also referred to the private nursery maintained by Consolidated.

N. S. Stone, president of the Mosinee Paper Co., Mosinee, pointed out that the "pulpwood situation in Wisconsin is desperate," and urged the commission to obtain information on the amount of merchantable timber now available in the state.

F. G. Kilp, forester for the Nekoosa Edwards Paper Co., asked the Commission to obtain figures on the amount of timber "so that industry can make plans for 10, 15 or 25 years ahead."

Ernest Swift, director of the Conservation Department, summed up the recommendations he would make in a four-point program (1) reorganization of the nursery program, giving more authority to William Brener, director of the Griffith State nursery at Wisconsin Rapids, and authorizing him to work with the college of agriculture on research problems involving forest insects and tree diseases; (2) establishment of a transplant nursery in southern Wisconsin; (3) expansion of forest protection areas; and (4) an inventory of state and county forests.

William J. P. Aberg, senior member of the Commission, summarized the Commission's views on the subject by agreeing that the forest protection areas must be expanded to encourage additional tree planting, and asserting that in two years, the nursery program must be able to supply 50 million trees.

"We're now planting more trees than any other state in the Union," he declared, in answer to Mr. Everest's remarks concerning the lack of action regarding conservation. "We have made progress," he continued. "We now know what the problem is and how to go about solving it."

Fred Wilson, co-operative forestry superintendent, suggested that legislation is needed to limit tree cutting and to preserve selectiv cutting. H said the cutting of young trees was destroying the state's forests.

Mr. Kilp also was for selective cutting, adding that small trees can't be cut economically and he believed there should be legislation to halt the cut of immature timber.

U. S. Minor Supplier Of Argentine's Newsprint

WASHINGTON — Preliminary U. S. export statistics reported on June 12 indicate that the United States furnished only about 60 tons of newsprint imported by Argentina during the past year, compared with total imports into that country of 153,000 tons.

The Argentine government accounted for 7,000 tons of the total, other users apparently being civilian. Canada supplied the bulk of imports, 38,000 tons, with others in order as follows: Sweden, 35,000; Finland, 28,000; Newfoundland, 28,000; and Norway, 23,000.

Friendship Day, August 1

KANSAS CITY, Mo.—Friendship Day, inaugurated in 1935 by Joyce C. Hall, local greeting card publisher, is growing in popularity and acceptance as one of America's traditional "remembrance occasions," along with Mother's Day and Father's Day.

Friendship Day, always designated as the first Sunday in August, will be observed this year on August 1.

As conceived by Mr. Hall, the day is simply one of remembering friends with a greeting card, a letter, a phone call, or other expression of thoughtfulness.

The first few Friendship Days attracted public attention largely through the greeting card departments of the nation's retail stores. Gradually, because gifts are usually linked to expressions of friendship, the idea spread to a variety of fields. Florists, candy, jewelry and gift establishments joined in support of the idea and have expanded their promotion of Friendship Day every year. The Department of Commerce recently added to the recognition by making historical and market information available through its Inquiry and Reference Section.

As a result of Mr. Hall's pioneering of the idea that friends deserve a "day" of their own, Friendship Day is now a growing American tradition.

Maine-N. H. TAPPI Meeting

The Maine-New Hampshire Section of the Technical Ass'n. of the Pulp & Paper Industry will meet at the Belgrade Hotel, Belgrade Lakes, Me., June 25-26. Following is the program:

Friday, June 25

10:00 AM—Registration.

11:30 AM—Annual business meeting and election of officers.

12:30 PM—Luncheon.

2:00 PM—"Some General Considerations in Microbiology," by Matthew E. Highlands, Agricultural Experiment Station, University of Maine.

2:30 PM—"Balance Slime Control," by F. A. Soderberg, General Dyestuff Corp.

3:00 PM—"Evaluation of Slime Control in Paper Mills," by Dr. J. W. Appling, Buckman Laboratories, Inc.

3:30 PM—"Microbiological Methods of Slime Control Treatment," by J. F. McCoy, National Aluminate Co.

4:00 PM—"Microbiological Control," by R. B. Martin of the Wallace & Tiernan Co., Inc.

7:00 PM—Dinner, followed by nightclub entertainment.

Saturday, June 26

9:30 AM—J. A. Sanborn, professor of microbiology at Syracuse University, will lead a discussion on microbiology in the manufacture of pulp and paper.

12:30 PM—Luncheon. Saturday afternoon will be devoted to golf, a fishing derby and ladies' bridge.

7:00 PM—Informal dinner and awarding of prizes.

Drive For Business Census Appropriation On

WASHINGTON — Business and industry groups are engaged in a last-minute drive to persuade Congress to appropriate sufficient funds to permit the 1949 business census before the session ends. Congress has authorized the census to be taken, but no funds have been appropriated to enable the Census Bureau to make preparations.

formula for the future
RESEARCH is opening up a fascinating vista of new processes and new products every day. For half a century, "Virginia" has been in the van of these developments. Your "Formula for the Future" may well be your specialized knowledge of your own business, plus "Virginia's" engineering resources, plus "Virginia" chemicals.
"Virginia" Liquid Sulfur Dioxide (SO_2) is a 99.98+ percent pure chemical which has four important applications in the pulp and paper industry:
Fortifier for cooking acid • Anti-oxidant
Antichlor • pH control
It is easy to handle, store, and use. Send for the NEW descriptive folder. VIRGINIA SMELTING COMPANY, West Norfolk 3, Virginia.
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NEW YORK BOSTON DETROIT
50 YEARS OF SERVICE TO INDUSTRY

Paper Industry Safety Progressing

JACKSONVILLE, Fla.—"Fifteen members of the Executive Committee, Pulp & Paper Section, National Safety Council, met in New York City on March 15, with H. P. Heubner, general chairman, presiding," D. J. Brett, editor of *Pulp & Paper Safety* reported to *Paper Trade Journal* on June 11.

"I was unable to attend this meeting, but the minutes, compiled by Secretary George W. Harper, were very complete, and the following information has been extracted from them," Brett said.

All the subcommittees reported excellent progress in their programs. Many projects are now underway, and the efforts being made by these committees will greatly increase the amount of safety material available for our industry.

"The regional representatives told of the strides being made in forming Pulp and Paper Safety groups in their areas. Arthur Carle, Cloquet, Minn., reported on the Duluth Safety School and the setting up of a Pulp and Paper session for this school. Thomas Furness gave a report on the activities of the Southern Pulp & Paper Safety Ass'n. George W. Harper, explained the progress being made on the Ohio Paper and Paper Products Safety Association, recently formed to further the cause of safety in Ohio paper and paper converting plants. James Sullivan told of the safety activities being carried out by the Folding Paper Box Ass'n.

"A. Scott Dowd, chairman of the Contest Committee reported that 225 mills are entered in the Pulp and Paper Manufacturing Division and 80 in the Re-manufacturing Division. Nineteen plants have completed the first seven months of this contest without a lost-time accident. All divisions in the contest show a decrease of at least 15 percent in frequency rates as compared with the same period last year.

"A discussion was held on the method used in presenting statistics each year in the Pulp and Paper Accident Rates Pamphlet; it was pointed out that they were neat readily usable by many members of the section. Chairman Heubner appointed Mr. Dowd, Mr. Sullivan and Pete Marconi to work with the National Safety Council Statistical Staff on this subject.

"Henry G. Lamb, safety engineer for the American Standards Ass'n., spoke to the group on "American Tentative Standard, Safety Code for Paper and Pulp Mills." He pointed out that at the present time the Association does not permit any tentative codes and that some action would have to be taken on the tentative pulp and paper code. The committee recommended that the National Safety Council take a poll of all members of the Pulp and Paper Section who produce pulp, paper, or paper board to determine whether they reaffirm the American Tentative Safety Code (P-1936) or whether this code should be revised and brought up-to-date. (We shall probably hear more about this later.)

"Program Chairman George W. Harper reported excellent progress with regard to the forthcoming Congress. All division chairmen are assisting him in formulating a program for our section from October 18 to 21, inclusive.

"The following were present at the meeting:

H. P. Heubner (general chairman) Flintkote Co., New York; R. W. Croucher, Minnesota & Ontario Paper Co., International Falls, Minn.; George W. Harper, Mead Corp., Chillicothe, Ohio; A. Scott Dowd, Fritz Publications, Inc., Chicago; A. E. Minor, Ontario-Minnesota Pulp & Paper Co., Ltd., Kenora, Ont.; H. B. Goodrich, Strathmore Paper Co., West Springfield, Mass.; G. Russell Leonhard, Paterson Parchment Paper Co., Bristol, Pa.; James B. Sullivan, Container Corp. of America, Chicago; J. Fred Berry, Alton Box Board Co., Alton, Ill.; Thomas Furness, Champion Paper & Fibre Co., Canton, N. C.; Arthur Carle, Northwest Paper Co., Cloquet, Minn.; A. J. Basile, Lawrence Paper Co., Lawrence, Kan.; Wm. H. McLaughlin, Lily-Tulip Cup Corp., College Point, N. Y.; W. D. McGuinness, Flintkote Co., New York; and E. P. Marconi, National Safety Council, Chicago.

Riverdale Dike Project Revived

WEST SPRINGFIELD, Mass.—Lloyd B. Cogswell, president of the Chamber of Commerce, has notified local paper manufacturers that recent letters to Congressman Charles R. Clason stating the need for additional dike protection in Riverdale, are beginning to bear fruit.

A representative of Brigadier-General Moses of the Army Engineers was here on June 11 to inspect the Riverdale area.

In the letter to Congressman Clason, the Chamber pointed out that more than $800,000 of new construction had been planned for that area since the bids for the dikes were turned down by the Army Engineers because of excessive costs. In view of this amount of building activity, the Chamber asked that a review of the Engineers' action be made.

The dike project for Riverdale received a government appropriation of $490,000 in 1946 but when bids for the work reached more than $1,000,000 the idea was dropped.

Time Table For Soda Export Licenses

WASHINGTON — Exports of caustic soda, soda ash and a number of other chemicals will be licensed hereafter on a "time-table" basis, following an agreement between the Office of International Trade and a panel of exporters of the affected chemicals.

Under this agreement, applications for export of the specified chemicals must be in the hands of the OIT prior to a cut-off date. Applications up to the quota limit will then be licensed, and the others returned. The latter may be re-submitted for fourth quarter consideration.

Processing dates for the third quarter for soda ash will be September 1, and for caustic soda, August 1, and for fourth quarter, November 1 for caustic soda and December 1 for soda ash.

The procedure will apply to chrome compounds, lead chemicals, benzol, phenol, and others.

Wisconsin River Valley Safety Conference

WISCONSIN RAPIDS, Wis.—The 1949 Wisconsin River Valley safety conference will be held at Stevens Point (exact date to be determined later) it was decided at this year's conference here June 3.

Robert C. Halder, of the Wausau Paper Mills Co., Brokaw, was co-chairman of the pulp and paper section, in which A. F. Bauman, director of personnel at the Rothschild plant of the Marathon Corp., was a member of the panel in a quiz on special safety problems in the paper industry.

At the foremen's luncheon, G. B. Lemke, of the Employers Mutuals, spoke on "You Are a Foreman."

A debate on the question, "Resolved: That the foreman is responsible for all accidents which occur in the mills," was a feature of this section.

Paper Wholesalers' Sales

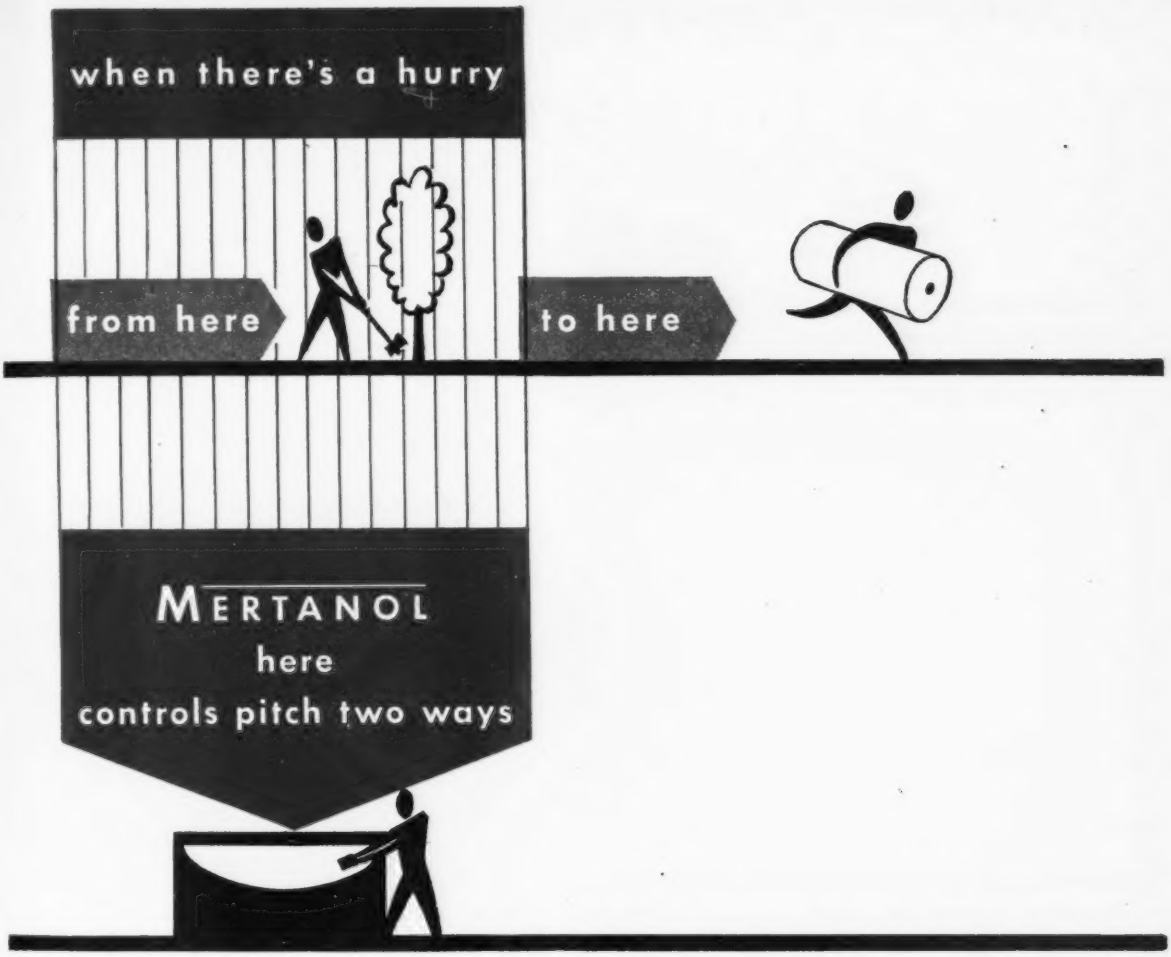
WASHINGTON — Sales of paper and paper products by 66 reporting wholesalers amounted to $8,841,000 in April, off two percent from March, and one percent below sales for April a year ago, according to the Bureau of Census on June 4.

For the first four months of this year, sales of the group were three percent above those for the corresponding months of 1947. Inventories reported by 31 firms gained eight percent in April over March, and were 41 percent higher than in April last year.

Estimated sales of paper and paper products wholesalers in the service and limited-function category were $119,000,000 in April, compared with $121,000,000 in March, according to the Commerce Department.

April Imports More Than Triple Exports

WASHINGTON — United States imports of wood and paper products in April were valued at $75.2 millions, compared with exports of $23.1 millions in the same month, the Department of Commerce reports.



Pitch troubles caused by unaged wood are greatest in summer months . . . the more reason why paper makers should investigate Monsanto's Mertanol 7L *now*. Two-way pitch control is readily achieved . . .

- **by helping to keep pitch dispersed**
- **by absorbing pitch physically**

Spotted paper, plugged screens and wire, stuck paper on drying rolls and dry cans can be eliminated by adding a small amount of Mertanol 7L at the paper beaters.

Before pitch troubles accumulate it will pay to take advantage of Monsanto's synthetic organic sulfonic acid product. The coupon below will bring complete information. Mertanol: Reg. U. S. Pat. Off.

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CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY, MERRIMAC DIVISION
Dept. PTJM3, Boston 49, Mass.
Please send me full information on Mertanol for pitch control in paper making.

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FIRM _____
ADDRESS _____
CITY _____ STATE _____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

NAWMD Organizes to Improve Relations with Foreign Buyers

NEW YORK—The National Ass'n. of Waste Material Dealers, Inc., has organized an Import and Export Trade Practice Committee with representation from each of its six commodity divisional associations. Members of this committee are:

James T. Flannery of the James T. Flannery Co., Jersey City, N. J., a vice-president of N.A.W.M.D., chairman.

Joseph Schapiro of S. Schapiro & Sons, Inc., Baltimore,, Walter T. Clark of Darmstadt, Scott & Courtney, New York and Louis Marcovitz of Loumar Textile By-Products, Inc., New York representing the Cotton Rag Council.

Robert Miller of R. & V. Miller, Inc., Newark, N. J., Eli Yoffe of Glaser & Yoffe, Inc., Natick, Mass., and Jack Cohn of B. Cohen & Sons, Chicago, representing the Wool Stock Institute.

David M. Dickson of Penn Paper & Stock Co., Philadelphia, and Paul Jos. White of Great Eastern Packing & Paper Stock Corp., New York representing the Waste Paper Institute.

J. A. Marchant of Philipp Bros., Inc., New York, Joseph M. Viener of Hyman Viemer & Sons, Washington, D. C., Harry S. Goldstein of L. Goldstein's Sons of Philadelphia, and Eric Gumpert of Gumpert Metals Corp., New York, representing the Metal Dealers Division.

Hugo Simon of Barth Smelting Corp., Newark, N. J., Howard K. Chapman of H. Kramer & Co., Chicago, and Henry Galamba of the Sonken-Galamba Corp., Kansas City, Kan., representing the Secondary Metal Institute.

J. J. Costello of Tanney-Costello, Inc., Akron, Ohio; Paul Meyerfeld of Leitman Associates, Inc., New York, and Nat. E. Berzen of Nat. E. Berzen, Inc., New York, representing the Scrap Rubber Institute.

Herman D. Moskowitz of Schiavone-Bonomo Corp., Jersey City, representing the Scrap Iron Division, and William J. Green of W. J. Green Co., Inc., New York, representing the Foreign Division.

When the foregoing committee held its first meeting at NAWMD's executive offices in New York there was a full discussion of the export situation and stress was laid upon the importance of proper sorting, grading and packing.

It was further stressed that the Association has in its memership dealers in all branches of the industry, doing a substantial export business, who through their experience can be relied upon to ship properly sorted, graded and packed materials.

The credit and adjustment bureaus of the Association prepared to supply trade experience data on any member concern in the U. S., if the foreign buyer will ask for it.

The Association stands ready through its import and export trade practice committee to investigate and use its best efforts to settle disagreements between member exporters in this country and buyrs abroad, with the understanding, however, that the Association assumes no responsibility in the matter.

Pacific Mills' Subsidiaries Win Safety Awards

VANCOUVER, B. C.—Judge Jas. W. Hodson of Seattle, director of the National Safety Council and Judge of the Superior Court, King County, on May 28 presented R. H. R. Young, manager of Canadian Boxes, Ltd., a subsidiary of Pacific Mills, Ltd., with the National Safety Council Award of Honor for Distinguished Service to Safety. Award of the flag and plaque was made in recognition of the company's safety record and the improvement shown in the past 12 months. The accident frequency rate in this plant dropped from 87.7 in 1946 to 13.9 in 1947; this in spite of an augmented payroll and increased hazard ratio. On the day of the presentation the company was entering its 190th accident-free day.

At the same presentation, B. R. Cancell, chairman of the Canadian Pulp & Paper Ass'n., (Western Division) and vice-president of the Powell River Co., Ltd., awarded the Canadian Boxes plant the CP&PA shield for the safest plant in the converting division in British Columbia. In 1947 the company posted 285,882 man hours with only four accidents.

On May 29 Judge Hodson presented the National Safety Council Award of Honor for Distinguished Service to Safety to Pacific Mills, Ltd., Vancouver converting plant for outstanding achievement in reducing accident frequency in the plant from 58.6 in 1946 to 18.9 in 1947.

Herdtner Rejoins Paramount

PHILADELPHIA — Paramount Paper Products Co., Inc., manufacturer of specialty paper bags, has reappointed Eugene Herdtner as Ohio representative. Mr. Herdtner is rejoining Paramount Paper after some years' association in an allied industry.

Boston Paper Trade Ass'n. Holds Lively Outing

BOSTON, Mass.—The annual outing of the Boston Paper Trade Assn. at the Charles River Country Club, Newton Center, June 7, drew heavy attendance despite rain. Seventy-one played golf, 149 had luncheon and 170 had dinner. A good number participated in sports other than golf.

In the business meeting, after the dinner, with President W. N. Stetson in the chair, Frank B. Cummings was made honorary secretary.

John W. Vivian, a member, was presented as dean of the industry, having been in business the longest of anyone in the paper distributing trade in this part of the country (71 years).

The following members were elected to regular membership at the meeting: Donald L. Gibbs and William F. Snyder, both of the Kendall Paper Co.; Courtney H. Reeves of the Carter Rice & Co., Corp., and Philip R. Byrne of Whitney Brothers, Inc. Other members elected included Allen G. Clarke, International Paper Co., Bagpak Division, limited membership; E. Thompson Steen, Service Paper Co., limited membership, and Sumner W. Newcomb of the Colonial Paper Co.

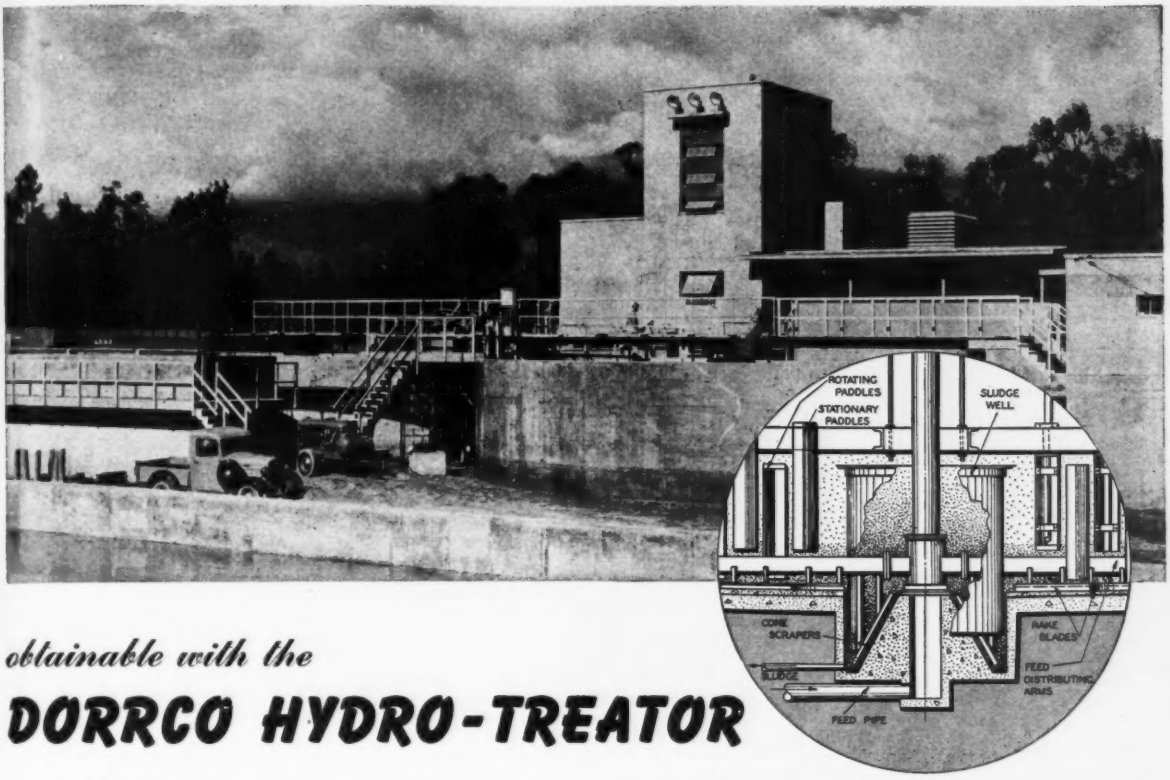
E. C. Lawless was winner of the trophy with first, net. Other winners in Class A were: Low gross, J. R. Whitney; second net, N. J. Stein; third net, J. J. Levis. Class B, low gross, E. H. Clapp; first net, E. L. Cummings; second net, P. J. Welch. Class C, best selected nine holes, E. W. Woodin. Guests, low net, E. E. Smith. Kickers, Graham Blandy, 2nd. A raffle of a set of irons was won by Dean Stout, guest. Philip Richardson was chairman of the golf committee. Besides Mr. Richardson, other members of the golf committee were Norman Harrower, W. Edwin Porter, Jr., Floyd H. Flackman and Don Richardson.

Winners in the other sports were as follows: Horseshoes (Hubert Lockhart in charge)—First, Royal P. Teele; second, J. G. Glover. Putting (Edgar P. Hay in charge)—First, N. J. Patterson; second, Ernest C. Calkin; guest, Don Richardson. Bowling (Merton C. Flemings in charge)—Roger C. Clapp and Herbert C. Ham. The ballgame, of which John A. Andrew, Jr., was to have been in charge, was canceled on account of the rain. Howard Wallingford was chairman of the sports committee.

Officers of the BPTA are: W. N. Stetson, Jr., president; F. Henry Savage, first vice-president; Floyd H. Blackman, second vice-president; T. Charles Casey, treasurer; and Norman E. Scott, secretary.

A must for successful water treatment . . .

POSITIVE SLUDGE REMOVAL



obtainable with the

DORRCO HYDRO-TREATOR

Positive mechanical removal of settled solids . . . an essential of high rate water treatment . . . is assured by Dorrco Hydro-Treator design.

HERE'S HOW IT WORKS

As feed is distributed, heavy, gritty solids quickly settle to the floor of the Flocculation compartment and are raked inward to the central discharge cone. Light, flocculated solids drift into the sludge well, and are thickened by the picket scrapers as they settle to the discharge cone. *In both cases, rake and scraper action is positive . . . forcing all solids to one central point for discharge.*

EFFECTIVE TREATMENT

Softening, color or turbidity removal can be *effectively* accomplished in the Hydro-Treator because of such features as uniform feed distribution, uniform flocculation conditions and zoned sludged thickening.

LOW INSTALLATION AND OPERATING COSTS

First cost is held to a minimum by simplicity of Hydro-Treator tank and mechanism design. *Treatment cost* is low because Hydro-Treator mechanism design promotes fast chemical reaction without interference among the three treatment zones.

FOR FURTHER INFORMATION

Dorrco Hydro-Treators are available in sizes ranging from 10 ft. to 100 ft. in diameter. A Dorr engineer will gladly supply more detailed information.

DORR

RESEARCH ENGINEERING EQUIPMENT

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THE DORR COMPANY, ENGINEERS
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Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

WALKER GOULARD PLEHN SPRING GOLF TOURNAMENT

THE ANNUAL SPRING GOLF TOURNAMENT staged at the Hudson River Country Club by the Walker-Goulard-Plehn Co., New York City paper merchant firm, on May 25, drew a record attendance. More than 80 WGP personnel and mill friends are pictured here at the dinner, which was a feature of the occasion.

Hammermill Revamps Sales Exec. Lineup

ERIE, Pa. — Major changes in the sales organization of the Hammermill Paper Co. become effective on July 1, Norman W. Wilson, president, discloses. The changes have resulted in promotions for John D. Zink, A. Ellis Frampton and Grant Richardson.

At a recent directors' meeting, Mr. Zink was elected a vice-president and given the newly created title of director of merchandising. Before he joined Hammermill 27 months ago, Mr. Zink held various management and sales positions in the paper manufacturing and converting fields. He was formerly president of the Writing Paper Mfr's. Ass'n.; a vice-president of the American Paper & Pulp Ass'n.; treasurer of the National Council for Stream Improvement, and, during the war, a member of the industry committee of both WPB and OPA.

Assistant Secretary Frampton was appointed manager of advertising and sales development, and Grant Richardson was named assistant vice-president and manager of sales.

Mr. Frampton has been a Hammermill man for 28 years — advertising manager since 1927 and assistant general sales manager since 1933.

With Hammermill since 1914, Mr. Richardson had been until his recent promotion, eastern district sales manager and export manager. During the war he served in Washington as director of the paper division, forest products division, WPB.

"The reorganization of Hammermill's sales structure was made to provide a complete merchandising effort for the increased production of Hammermill lines, and in preparation for the retirement next December of Harrison R. Baldwin, vice-president in charge of sales," President Wilson explained. "Mr. Baldwin, who has been with the company for 34 years, has directed Hammermill's sales effort since 1926 and will continue to serve the company as a vice-president in a full-time advisory capacity for the remainder of 1948."

Thilmany Modernizing

KAUKAUNA, Wis.—Thilmany Pulp & Paper Co. is altering its boiler house for installation of a new 1,000 hp. boiler. Estimated cost totals $238,800.

The new boiler will increase the output of processed steam to provide for the needs of a new paper machine, installation of which is scheduled to start this month, and for possible generation of electric power should the need develop.

The project also includes a new water treatment building, track hopper, connecting tunnel, coal crusher house, 475-foot overhead coal conveyor and ash receiver. The schedule calls for operation in late fall, Mr. Carr said.

The ash receiver is connected to the boiler house by a temporary vacuum pipe which carries the ashes from the boiler to the receiver. The old receiver occupied the site on which a water treatment building will be erected. The water treatment building is expected to cost about $22,500 exclusive of machinery, some of which will be new.

The 475-foot overhead coal conveyor will carry coal from a crusher to the top of the boiler house. It will rise from ground level to about 150 feet, the approximate height of the boiler house after the alterations have been completed. The conveyor will be of steel except for the first few feet at the coal crusher end.

The crusher house, track hopper, and conveyor tunnel between the track hopper and crusher house have been completed.

The crusher house, also nearing completion, is underground and will house equipment to crush coal to stoker size.

Permanent Construction Co. of Milwaukee, Wis., is the general contractor, and Power Service Corp. of Minneapolis is furnishing and installing the Babcock & Wilcox boiler. Part of the steel construction work has been subcontracted to the Warden Allen Co., Milwaukee.

New Brunswick Paper Mill Plan Making Progress

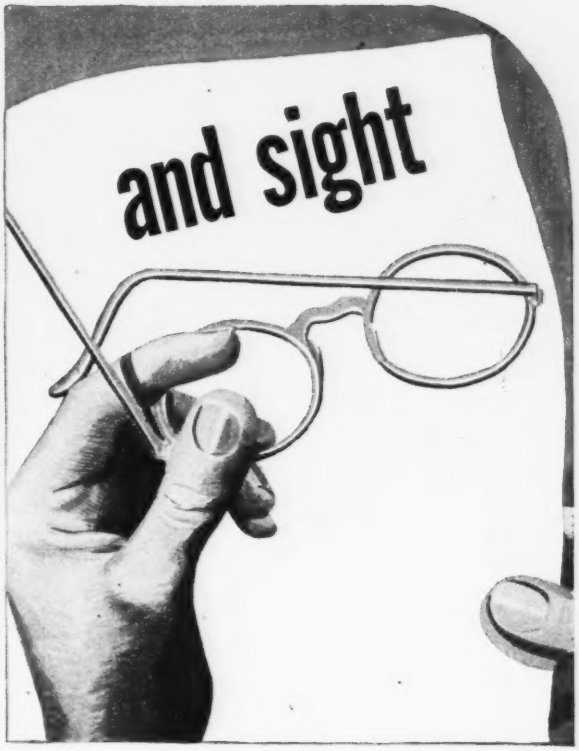
FREDERICKTON, N.B.—R. J. Gill, Minister of Lands and Mines for the Province of New Brunswick, has petitioned the Legislature for introduction of a motion asking incorporation of a proposed $65,000,000 pulp and paper mill.

The firm, to be known as the Maritime Pulp & Paper Mills, Ltd., is asking for incorporation of a mill to be established at a tidewater site at Lepreux in Charlotte County.

First broached before the war, and revived again last year, the mill, under promotion of E. C. Atkinson, Fredericton, lawyer, and F. C. Bagley, Sr., of Augusta, Me., would have an estimated initial capacity of 310,000 tons a year. Ultimate production would be 400,000 tons.

The mill, it is understood, would be financed partly by United States publishers. The plant would employ about 5,000 workers and be in production in January of 1950.

Helps your coated paper sell



The slicker "feel" and glossier appearance that NOPCO* ESI imparts to coated stock . . . enhances its sales appeal

Though NOPCO ESI is a comparatively new product, it is looked on as an *old friend* in many coated paper mills. That's because this aqueous dispersion of an insoluble metallic soap helps in so many ways to give your coated stock the slick feel, the luster and smooth finish that denote a product of the highest grade.

You'll get the same fine results from NOPCO ESI, the same brightness, gloss and smooth finish whether you use the conventional or paper machine coating process . . . whether you use starch or casein as the adhesive in your clay coatings. You'll also find that NOPCO ESI improves flow and brushing characteristics.

NOPCO ESI *reduces flaking and dusting* . . . More and more mills report that NOPCO ESI reduces flaking and cracking and improves fold . . . thoroughly plasticizes pigment particles even after the coating has dried with the result that dusting on the supercalenders is reduced, cleaner rolls and more efficient action assured. Some users even find NOPCO ESI useful in controlling foam in their coating composition.

SIMPLE—STABLE . . . NOPCO ESI is readily diluted to any desired concentration . . . gives a dispersion stable to both mild acids and alkalis.

GOOD SUGGESTION *for manufacturers of uncoated folding box board* . . . To improve your product from the printing standpoint — particularly when oil-base inks are employed — use NOPCO ESI with starch on the calender stack of the board machines.

HOW TO GET THE WHOLE STORY . . . If you — in common with many other mills — have difficulty in attaining uniformly satisfactory performance from clay coatings — write for complete particulars on NOPCO ESI.

NOPCO CHEMICAL COMPANY, Harrison, N. J.

Formerly National Oil Products Co.

Branches: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.

An Affiliate of the American Pulp and Paper Mills Superintendents Association

NOPCO ESI

Aqueous Dispersion of an Insoluble Metallic Soap

*Reg. U.S. Pat. Off.

NOPCO EVOLVED THROUGH RESEARCH

Senate Approves Flood Control Funds

SPRINGFIELD, Mass.—Paper manufacturers received word here on June 12 that the Senate has approved a $132,400,000 authorization bill for 63 new flood control and navigation projects. The amount is $47,000,000 more than was voted by the House earlier this month.

The measure, which provides no funds for construction, goes back to the House for consideration of the changes made by the Senate.

Separate legislation is required to provide money for the projects. The Federal funds may not be appropriated for several years, as there already is a backlog of several billions of dollars of projects which have been authorized but for which no funds have been provided.

The Senate bill includes $30,000,000 for rivers and harbors work, and $60,000,000 for flood-control projects.

At the same time, paper officials learned that the House has approved and sent to the Senate for final action a compromise appropriations bill carrying a record $573,000,000 for flood control and navigation projects.

The funds include $256,000 for work on the Chicopee River, but the conference committee voted to give no funds to the Barre Falls Reservoir.

Congressman Charles R. Clason of Sprinfield informed paper officials that the appropriation will complete all except a small area at Willimansett, that portion being a separate project.

"It appears certain, that money to start the Barre Falls project—the dam and reservoir—will be made available next year," Rep. Clason said.

Both Rep. Clason and Senator Leverett Saltonstall have pledged their all-out effort to obtain the appropriation next year.

Rep. Clason said funds earmarked for Barre Falls were taken out of the final appropriations bill for civil functions of the War Department because the project had not been recommended by the Bureau of the Budget.

Lozier Paints Paper's Growth for Realtors

NEW YORK—Kenneth Lozier, vice-president of the St. Regis Paper Co., speaking June 4 at the regional meeting of the North Atlantic section of the Society of Industrial Realtors told his audience that expansion of the paper industry can be expected because development of new uses, the rise in per capita consumption of paper, and further integration of papermaking facilities with conversion of paper to its many uses are encouraging growth. At the same time, building costs, and limited supplies of timber which can be used from the economic standpoint of costs involved, are acting to restrain new developments. American production will not be "disturbed," Mr. Lozier said, by any "great influx of imports of pulp, paper, or wood" because of shortages abroad in potential exporting nations. The present newsprint shortage will be "largely over" in the next few years, he stated, as a result of the increase in Canadian production.

General's Beaver Dam Mill Upping Output

BUCK RUN, Pa. — The Beaver Dam Paper mill of the General Paper Co., which was damaged by fire in February 1947, and which was rebuilt and resumed operating about a year later, is now producing at a little better than its rate of production before the fire.

Additional machinery is being installed and within a short time production will be considerably increased, Ralph F. Bicking, general manager, reports. The plant is turning out paper towels, the same product that it produced before the fire.

During the rebuilding operation a new beater, a new Jordan refining engine and four more dryers were installed on the paper making machine. A new hydro-pulper being installed to replace some of the beaters is expected to be completed and in operation early in July.

For years, until the fire halted operations, the plant operated steadily in good times and bad.

Mass Vacation Plan Favored by Mills

HOLYOKE, Mass. — Again, this year, most of Holyoke's large paper mills will follow the "general shutdown" policy on summer vacations.

Three of six queried will close down from July 4 to July 18, inclusive. They are: American Writing Paper Corp.; Parsons Paper Co., and White & Wyckoff Mfg. Co.

National Blank Book Co. will be shut down from July 26 to August 1, with many employes taking either the week before or the week after this period in addition. The Marvellum Co., and Whiting Paper Co., will be closed down beginning July 4 for "at least" a week.

Armstrong Replanting Ga. Cutover Land

SANDERSVILLE, Ga.—Armstrong Cork & Paper Co. has bought 1,000 acros of cutover land in Washington county from C. E. Parker. A company spokesman said the replanting would get underway in January and February, or perhaps earlier.

Survey indicates that several million pine seedlings have been transplanted in the county during the past decade. The largest acreage is owned by J. C. Archer, who has planted nearly two million trees, including long leaf pine.

One informed source here said pulp wood, one of the largest sources of income for many farmers, is leaving the county at the rate of several carloads daily. The Armstrong company, visioning the depletion of supplies a decade or so hence, decided to replant its cutover land and will lend assistance to other woodland owners who desire to adopt the same program, it is stated.

F. S. Klein New Byron Weston Mill Manager

DALTON, Mass.—F. S. Klein has been named mill manager of the Byron Weston Co., by Hale Holden, Jr., president of the firm. Mr. Klein, who has been technical director at the Weston mills for a number of years, has been associated with the company since 1935.

Albert F. Scott continues as superintendent of the rag department, C. H. Wilson as superintendent of the production Department, and P. E. Tupper as superintendent of the finishing department.

L. P. Taylor has been placed in charge of new product development and sales-production coordination.

Inter-Company First-Aid Competition

VANCOUVER, B. C.—The Pacific Mills, Ltd., annual inter-company first-aid competition was held on May 29 with three teams participating. They represented the Vancouver converting plant, the Ocean Falls mill and Canadian Boxes, Ltd. The Canadian Boxes team emerged winners by one point from the Ocean Falls team. At a dinner the same evening E. W. Campbell, personnel director served as chairman and J. A. Young, first vice-president. J. A. Young presented the trophies to the winning team.

Ohio Wesleyan Gives Dr. Lewis D.Sc. Degree

APPLETON, Wis.—Dr. Harry Fletcher Lewis, dean of the Institute of Paper Chemistry, received an honorary Doctor of Science degree at the graduation services of Ohio Wesleyan University at Delaware, Ohio, June 6. Dr. Lewis received a B.A. degree from Wesleyan University of Connecticut in 1912. He earned his M.S. there in 1913 and Ph.D. at the University of Illinois in 1916.

Albemarle Elects Fleet V-P and Board Member

RICHMOND, Va.—S. Douglas Fleet has been elected a vice-president and made a director of the Albemarle Paper Mfg., Co.

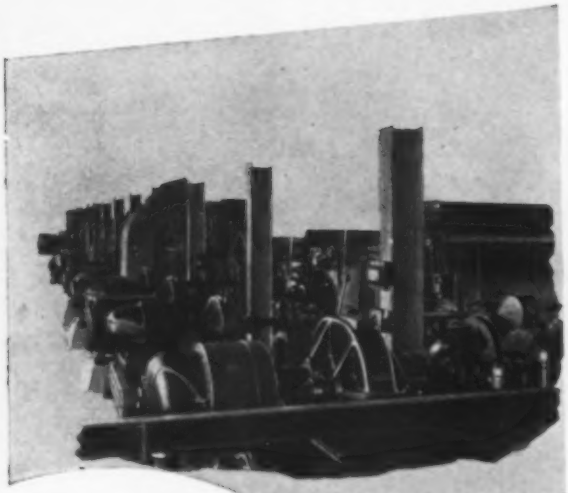
DIAMOND
Liquid Chlorine
IN MULTI-UNIT CARS

tank cars, or

in cylinders

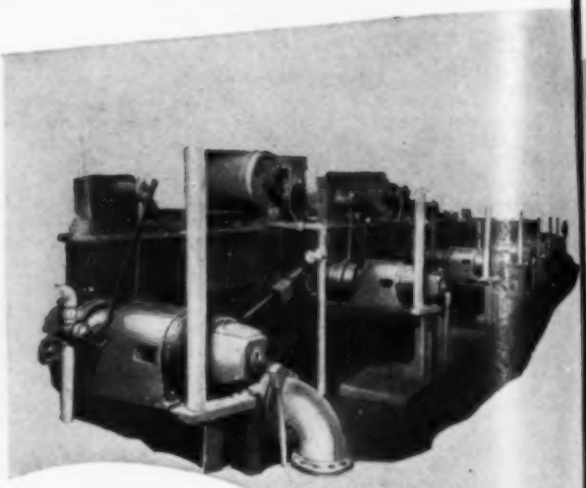
as required

CHLORINE



Precise from start to finish!

G-E ELECTRONIC AMPLIDYNE SECTIONAL DRIVES assure precise speed control—from head box to reel. Higher running speeds are made practical because speeds between sections are held closely. The control is highly responsive to load changes; hence fewer paper breaks. On changing to different grades and weights, you save time, make less broke.



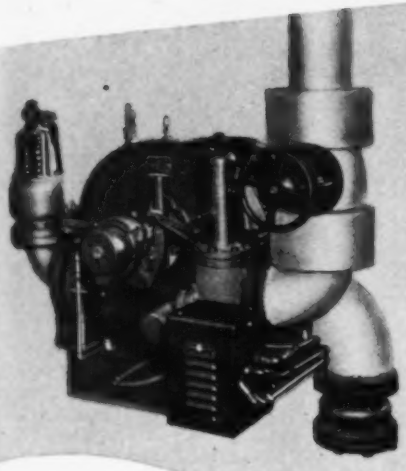
Helpful for "babying" felts

G-E HELPER DRIVES furnish the torque to take all the drive load off the felts, regardless of operating speeds or speed changes. Or they can be co-ordinated with the suction-box vacuum or other variables so as to counterbalance changes in the load. Felts are more fully protected from strain and friction, draw is more accurately regulated, and acceleration and deceleration are smoothly accomplished.

One of these

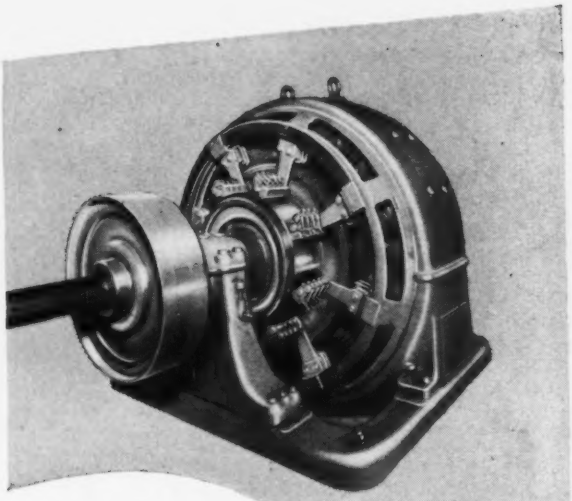
MEANS

No matter what paper machine you're using—no matter what the operating conditions are—you'll find that the drive you need to cut costs is one of the four basic types described above. General Electric makes all four types—and that's a good reason why you have much to gain by bringing your drive problems to us. With a wide selection of drives to choose from you can get the right



Smooth when you change speed

G-E MECHANICAL-DRIVE TURBINES, with electric governing systems, can be provided with smooth speed changes over a range as high as 30 to 1. The desired speed is attained with no hunting and is held with an accuracy of 1/4 of one per cent under normal operating conditions. The electric governor on this drive is housed in protective enclosures which will resist entry of moisture in damp atmospheres.



Right for board or tissue

G-E SINGLE-MOTOR DRIVES use an electronic-tube, amplidyne-control combination to provide speed ranges up to 14 to 1 for a wide variety of paper-making operations. The drive is readily adaptable to any primary source of power. It can be directly connected to the lineshaft or operated through a speed-reducing device. The drive is economical in operation, over wide speed ranges.

Drives—

LOWER COSTS FOR YOU

combination of speed-control accuracy and sensitivity. You can get practically any speed range you want too. Finally, you can select a drive that's easier to operate, occupies less floor space, and requires less attention. Why not talk it over soon with a General Electric paper-mill specialist? *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

663-20

Great Lakes Dividend Dates Synchronized

FORT WILLIAM, Ont.—Directors of Great Lakes Paper Co. met here on June 4 to take dividend action on the preference and common shares. This was the first time that joint action has been taken and follows President Earl Rowe's statement at the recent annual meeting that consideration of dividends on both the preferred and common stock should take place at the same time and that the date of payment should coincide. Accordingly, the dividend on the common shares was considered and declared along with the dividend on the preferred. The declaration calls for a payment on June 30 to shareholders of record June 12.

The initial dividend on the common stock, comprising 25 cents plus 15 cents extra, was paid Nov. 15 last, while for the first quarter of 1948 a dividend of 40 cents was disbursed on March 1.

Griffin Gilbert Paper's Eastern Sales Rep.

MENASHA, Wis.—George W. Griffin has been named eastern sales representative of the Gilbert Paper Co., effective July 1, President A. C. Gilbert reports. Mr. Griffin will divide his time between the Gilbert New York offices and the territory. For the past five years Mr. Griffin has been sales representative for Standard Register Co., Dayton, Ohio. Previously he was employed by the American Writing Paper Corp., Holyoke, Mass.

Bulkley, Dunton Replaces Flinn as Hammermill Agt.

ERIE, Pa. — The Bulkley, Dunton Co., Inc., New York City, has been appointed a Hammermill agency. This appointment replaces the agency of F. A. Flinn, Inc., a distributor of Hammermill papers since 1912, which is now terminating its business. Effective with its appointment, Bulkley, Dunton becomes one of nine firms distributing Hammermill products in New York City.

Almand to Brown Co.

BERLIN, N. H.—J. Raymond Almand, formerly paper division superintendent with the Union Bag & Paper Corp., Savannah, Ga., has accepted the position of general superintendent of the paper manufacturing division of the Brown Co., of this city.

Mr. Almand, a graduate of Louisiana College, has been with Union since 1941. Prior to that he was with the Southern Kraft Corp. at Panama City, Fla.

Safety Records Bettering

CHICAGO—"Industry closed its books on 1947 with a better safety record than the year before," the National Safety Council reported on June 11.

In frequency of disabling injuries per million man hours, the pulp and paper industry reported 18.32, as compared to a national figure of 13.26. In severity — days lost per 1,000 man-hours, the pulp and paper figure was 1.39 as compared to the national figure of 1.23.

Encouraging improvement over 1946 was reported for 1947.

OBITUARY

Edgerton A. Throckmorton

Edgerton A. Throckmorton, 46, president of Container Laboratories, Inc., died of a heart attack in Passavant Hospital, Chicago, on June 7. Mr. Throckmorton was born in Morristown, N. J., educated abroad and at Townsend Harris Hall, New York City. He began his business career with the Lagerloef Trading Co., and was general manager of the Match Import Corp., from 1919 to 1929. For the following two years he was assistant to the president of the Sefton Mfg. Corp. In 1931 he joined the Container Corp. of America and became vice-president in charge of research. In 1946 he left that organization to head Container Laboratories, Inc.

During the recent war, Mr. Throckmorton was a member of the Tropical Deterioration Committee of the Office for Scientific Research and Development. He also served as packaging consultant to the office of the Quartermaster General and the WPB.

Active in many clubs and societies, he was vice-president in charge of the packaging division of the American Management Ass'n. His pastime was horsemanship.

Surviving Mr. Throckmorton are his widow, two sons and three daughters.

Charles M. Ready

Charles M. Ready, 68, assistant treasurer of the St. Croix Paper Co., Boston, Mass., died at his home, 140 Forest Street, Medford, Mass., on June 13. Mr. Ready was employed by the St. Croix company most of his working life. He was born in Woburn and a graduate of its schools. For the past 45 years he lived in Medford. Surviving Mr. Ready are three sisters: Mrs. Evelyn Cornwell, Mrs. Elsie Mackenzie, and Miss Teresa M. Ready, and a brother, Vincent C. Ready.

Edward J. Smith

Edward J. Smith, superintendent of the Sanitary Paper Mills, East Hartford, Conn., died on June 6. Prominent in civic and political activities in East Hartford for many years, Mr. Smith was secretary of the Town Planning Commission, treasurer of the Fourth District Democratic Club, a member of the East Hartford Democratic Club, and the Burnside Men's Club. Surviving him are his widow, a son, two daughters and a stepson.

Countercraft, Inc., Wichita, Adding Paper Box Factory

WICHITA, Kan.—Countercraft, Inc., has leased the building at 140 North Waco street and will add a second story to it, increasing floor area to 12,000 square feet. The enlarged building will be used as a paper box factory and will also house the firm's general offices which now are at 117 South Washington street in the wooden box factory.

Jasperson Returns From Brazil

WISCONSIN RAPIDS, Wis.—C. A. Jasperson, secretary-treasurer of the Nekoosa-Edwards Paper Co., has resumed his duties after a trip to Rio de Janeiro, Brazil, as a delegate from the Wisconsin Rapids Rotary Club. He was accompanied by Mrs. Jasperson. Mr. Jasperson is also president of the village of Port Edwards.

New Home For Paper Associated Products Corp.

FAIR LAWN, N. J. — Richard T. Peterman, president of Paper Associated Products Corp., reports that construction has started on a 90,000 cubic foot warehouse and office building on State Highway 17 at Ramsey, N. J. Occupancy is planned for August 1, at which time the firm will remove to the new quarters.

Maine Paper Products Co., Opens in Portland

PORTLAND, Me.—Solomon Goldkrand has launched the Maine Paper Products Co., at 401 Fore Street, to conduct a paper products business catering to grocers, drug stores, restaurants and other commercial and industrial companies.

Letters

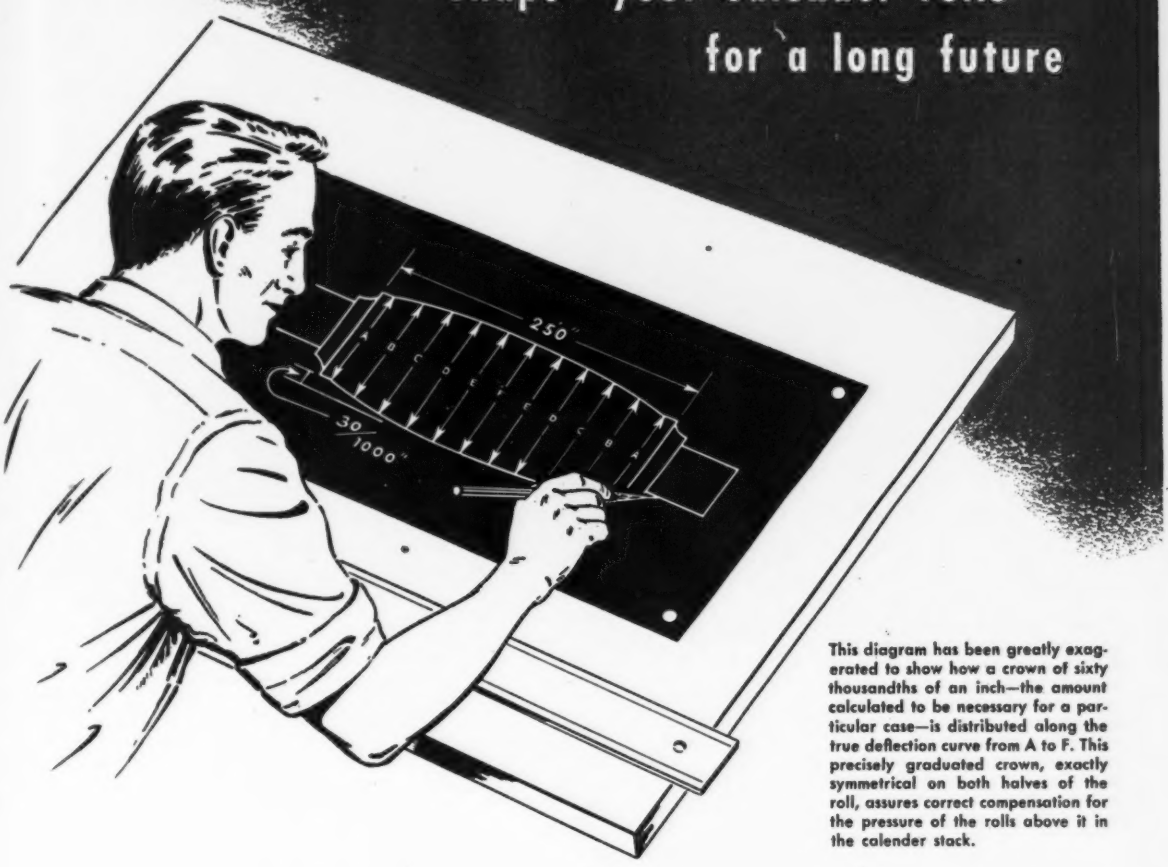
Sirs:

In the story on The Institute of Paper Chemistry's Executives' Conference, appearing on pages 46-47 of the May 27, 1948 issue of the Paper Trade Journal, a quotation from the writer's discussion was, "It is possible to generate sound of such incredibly high power, he declared, that a wad of cotton held in the beam of sound will burst into flame." This is a correct quote, but, taken without the context of the discussion, it creates an impression regarding our thoughts on ultrasonics which is opposite to our actual opinion.

In the discussion following the above quotation, it was pointed out that energy in electrical form costs several times as much as energy supplied through steam. The discussion made it clear that heating (or drying) by means of ultrasonics would be of dubious value to the industry. The non-thermal applications of ultrasonics were discussed with some reservation as being of potential value in the pulp and paper industry.

J. A. Van den Akker
Research Associate
Institute of Paper Chemistry
Appleton, Wis.

Let us help you "shape" your calender rolls for a long future



This diagram has been greatly exaggerated to show how a crown of sixty thousandths of an inch—the amount calculated to be necessary for a particular case—is distributed along the true deflection curve from A to F. This precisely graduated crown, exactly symmetrical on both halves of the roll, assures correct compensation for the pressure of the rolls above it in the calender stack.

The importance of correct crown shape of calender rolls cannot be exaggerated.

Sometimes, either not enough care is taken in crowning the bottom rolls or difficulty is experienced in computing the actual deflection to the thousandth part of an inch. Then there is trouble.

If the bottom and next-to-bottom rolls are ground with the curve off center, the next-to-bottom roll will crowd so hard that the chafing rings will wear out very rapidly and one end of the roll will become very hot, causing expansion at this end and pinching of the paper.

If you are finding it hard to figure the correct amount of crown, especially when it is necessary to increase the leverage on the top roll, why not let us help you? Where we have not previously made a set of rolls identical to your requirements in every respect (and this will be the exception), we can estimate the amount of crown according to the deflection formula, modified by our experience with the nearest similar rolls we have made.

We shall be glad to assist you—without any obligation on your part. FB—437

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Chicago, Los Angeles, Tulsa, Houston

FARREL CENTENNIAL 1848 1948

Farrel-Birmingham

Greeley Huyck Treasurer

ALBANY, N. Y. — William Greeley was elected treasurer of F. C. Huyck & Sons of this city on June 10. Mr. Greeley had been sales manager of the firm's felt division since 1930.

Other officers are: James L. Braman, chairman of the board; Francis H. Eldridge, president; Harry Eldridge, first vice-president; Charles V. Spencer, second vice-president; and Roderick T. Clarke, secretary.

"Mr. Harry Eldridge, who has been both first vice-president and treasurer, is thus freed to devote full time to his vice-presidential duties and to the broader phases of finance," President Eldridge pointed out in announcing Mr. Greeley's appointment.

A graduate of Union College, class of 1920, Mr. Greeley joined the firm in August of that year. He was successively assistant to the head of the cost department, New England and Middle Atlantic states sales representative in the paper maker's felt field, and sales manager of the felt division.

Fleck Gets Brammer Control For Canada and N. F.

NEW YORK—Paper & Industrial Appliances, Inc., announces the manufacture and sale of the Brammer Recording Consistency Control in Canada and Newfoundland by Alexander Fleck Ltd., Ottawa, under license agreement.

Dow Caustic Chlorine Plant Using Mercury Cells

SARNIA, Ont.—Dow Chemical Co. will use mercury cells in its new caustic-chlorine plant here, according to reports. Krebs cells and also cells developed from captured German equipment will be installed. This marks the first use in North America of both types. The plant will have a daily capacity of 50 tons of chlorine.

JAMES S. THORNTON

—recently added to the sales engineering staff of the Downingtown Mfg. Co., Downingtown, Pa., designer and builder of paper making machinery, was formerly employed in the same capacity by the Lamson Corp., manufacturer of pneumatic dispatch tubes and mechanical conveyors. Prior to that, Mr. Thornton was in the Army for four years, serving in Japan and Korea. At the time of his discharge, he held the rank of Lieutenant Colonel. . . . He graduated from M.I.T. in 1941 with a B.S. degree in mechanical engineering.

Monsanto Vinyl Chloride Plant Heads Named

SPRINGFIELD, Mass. — Carl T. King, production manager of the Monsanto Chemical Co. plastics division at Indian Orchard, disclosed on June 7 that G. Theodore Barks has been named general superintendent of the company's new vinyl chloride production unit. Mr. Barks has been division superintendent of the U. S. Rubber Co.'s Fisk tire division plant at Chicopee.

At the same time, Mr. King said that Salvadore P. Lio, superintendent of the plant's technical group, would be transferred to the post of operating superintendent of the new plant. Mr. Lio has been with Monsanto since 1942. Assisting him will be Louis Schroeder, who is being promoted from the research department to the position of area supervisor. Mr. Schroeder joined Monsanto in 1944.

Link Belt Co., Building Huge Houston Plant

CHICAGO—Link Belt Co. has let the contract for erection of a one-story, all steel factory to house a machine shop, structural steel shop and warehousing facilities on a ten-acre tract in the 5100 block of Wayside Drive in Houston, Texas. The building will have three bays, and a two-story office section of masonry construction in front. J. A. Pitzinger is architect and engineer for the 45,000 square foot plant, and Vivrett & Vivrett are the construction contractors.

Edward J. Burnell, vice-president and sales manager of Link Belt, stated that the new facilities will serve the Texas, Arkansas and Louisiana areas.

du Pont's Robinson Retiring —John F. Daley His Successor

WILMINGTON, Del. — Edmund G. Robinson, general manager of the E. I. du Pont de Nemours & Co. organic chemicals department since 1929, will retire from active company service on July 1. His successor is John F. Daley, general manager of the Du Pont pigments department. Mr. Robinson will continue as a member of the company's board of directors.

Hayden's Remensnyder On SOCMA Board

NEW YORK — J. P. Remensnyder, vice-president of the Heyden Chemical Corp., has been named a member of the board of the Synthetic Organic Chemical Mfr's. Ass'n. Mr. Remensnyder, who is in charge of sales for Heyden, succeeds Dr. W. M. Billing, who was named first vice-president of the Association.

Dively In AMA Post

NEW YORK—George S. Dively, president and general manager of the Harris-Seybold Co., Cleveland, Ohio, has been named production vice-president of the American Management Ass'n.

Contract Dickering Continues

HOLYOKE, Mass.—Another labor-management deadlock, relative to a new wage contract, reached the local area June 11 with the management of B. F. Perkins & Son., Inc., Willimansett, and Federal Labor Union 24330, AFL, at loggerheads along with similar officials in the papermaking industry.

The contract at the Willimansett plant expired June 2. William Malone, AFL organizer, who is representing the union in the negotiations, had asked for a 15-cent-an-hour wage increase. Judge Philip O'Brien, counsel for the paper mill machinery firm, has made a counter-offer of three cents an hour boost.

The union has requested that a Federal conciliator be assigned from the Boston office to sit in on further negotiations.

The employes of the Stony Brook and Pearl City divisions of the American Tissue Mills, also owned by the Perkins interests, will meet next week to receive the seven-cent offer made by this company for a new contract. The original offer of two cents an hour was rejected last week. The workers, which are affiliated with the Eagle Lodge of Papermakers, are asking for a raise of 31¼ cents an hour.

In the papermaking mills here, the contract expired May 31. As negotiations for a new contract progressed, an extension was made until June 12 by mutual agreement. This date has been extended to June 20. Committees from the manufacturers and workers will meet next week at the Hotel Roger Smith to talk terms of a new contract.

Harold T. Martin, labor relations advisor to the manufacturers, would only say that the "negotiations are still open," but would not state if the unions dropped from their 25 cents an hour increase demand, or if the manufacturers offered to hike the proposal of an eight-cents an hour boost and no union shop, or 7½ cents an hour with increased insurance benefits.

A RESEARCH CORPORATION COTTRELL

will save you $1000 to $1500 worth of salt cake every day

The engineer from Research Corporation spoke confidently. He had studied the equipment layout, and noted that the mill had a capacity of 1,000 tons of pulp per day. From his experience and specialized knowledge he knew that he could safely anticipate a minimum recovery of 100 pounds of salt cake for each ton of pulp produced—total: 50 tons of salt cake per day—value: $1,000.00 to $1,500.00 per day dependent upon salt cake cost prevailing at the plant.

Performance like this is the result of over 35 years of experience combined with careful engineering appraisal, attention to details and a remarkably efficient method. These, plus equipment which gives recoveries of 90 to 99%, are responsible for outstanding records of recovery.

If you are losing your chemicals through the stack in a soda or sulphate mill investigate the Research Corporation Precipitator.

BC-108

Research Corporation Installations

47 CARBON BLACK PLANTS
200 METALLURGICAL INSTALLATIONS
203 ACID PLANTS • 34 PAPER MILLS
262 DETARRING INSTALLATIONS
195 POWER STATIONS
71 STEEL PLANTS • 95 OIL REFINERIES
AND MISCELLANEOUS INSTALLATIONS

RESEARCH CORPORATION

405 Lexington Avenue, New York 17, N. Y.
122 South Michigan Avenue, Chicago 3, Illinois

International Paper Co.

(Continued from page 12)

pulp-handling equipment have been added.

A new drive on the paper machines will improve speed and efficiency and allow more flexibility. New bleaching and washing equipment will increase capacity of the pulp mill and improve quality. A multiple-knife chipper was put into service which, in conjunction with a Diesel crane in the wood yard, increases the mill's wood handling and wood preparing capacity. A Cottrell precipitator similar to the one being installed at Ticonderoga is nearing completion.

York Haven Mill—High efficiency beaters and refiners have been installed. New paper machine screens, drives, and pulp-cleaning and handling equipment have increased flexability, improved quality, and boosted production. In addition, mainttenance work deferred because of the war will be completed this year.

Southern Facilities

In the South, according to Mr. Friend, the $40,000,000 expansion program will increase the productive capacity of the Southern Kraft Division's eight mills by 200,000 tons per year, which is about one-eighth of the existing capacity.

Existing plants are being further modernized and their efficiency greatly increased. The program also includes appropriations for additional southern woodlands and a vastly increased mechanized equipment for handling wood in the forests, at the mills and at intermediate transshipment points. Converting plants in the South are also being enlarged and improved.

Increased pulpwood requirements will create almost 2,700 new jobs in the woods.

All areas of the South where the Company has mills will derive benefits from the expansion program. The largest expansion programs are those at Panama City, Florida; Bastrop (2 mills) and Springhill, Louisiana; and Camden, Arkansas. Other mills affected are in Georgetown, South Carolina; Mobile, Alabama; and Moss Point, Mississippi.

Major improvements to be made at each mill and the increases in capacity to be realized by the end of this year, are summarized as follows:

Bastrop and Louisiana Mills—Increased pulp and machine capacity at the Bastrop mill, which makes Chemfibre, will raise the potential output from 270 tons per day as of the first of the year to about 330 tons a day by December 31, 1948.

At the Louisiana Mill, also in Bastrop, which makes kraft paper and kraft specialties, the improvements call for additional pulp mill capacity, a continuous caustic system, a new Fourdrinier paper machine, additions to the present machine capacity, and increases in both the power plant and the bleach plant. Capacity, rated close to 300 tons a day as of January 1, 1948, will be increased during 1948 by 160 tons a day as a consequence of the improvements.

Camden Mill—Expansion of this mill, which is devoted to the manufacture of kraft paper, involves additional pulp mill capacity, increased paper machine capacity, and a power plant. The capacity was rated at over 330 tons a day as of the first of the year, to which 115 tons a day will be abbed by the year-end.

Georgetown Mill—At the Georgetown Mill, which underwent a large expansion program in 1942, making it the largest single paper mill in the world, the new expansion plans call for still more machine capacity. The production of Chemfibre and kraft container board is currently rated at about 1,350 tons a day, and the expansion program will result in an increase in Chemfibre production of 20 tons and kraft board production of 30 tons a day by the end of 1948.

Panama City Mill—Modernization involves additional pulp mill and machine capacity and additions to the power plant. Kraft board production, in which Panama City has specialized since the mill was opened in March, 1931, is currently rated at 800 tons per day and by December 31, 1948 will have risen to 1,000 tons daily.

Springhill Mill—The mill will be expanded, with additional kraft pulp and bleached pulp capacity, and increased machine capacity which will become available in 1949. The bleach plant wil lalso be enlarged to enable handling of the additional requirements of the mill, and power plant equipment will be substantially increased.

Moss Point Mill—Minor improvements are being made. Installation of a continuous caustic system will increase the rated capacity somewhat. By the year end the mills daily capacity for kraft paper specialties will approximate 250 tons daily.

Mobile Mill and Bag Plant—Expansion program at the mill and plant involves a continuous caustic system and additional power plant equipment. The capacity of the mill is being increased and by the year-end should reach a total of better than 500 tons of kraft wrapping and bag paper a day. The bag plant converts the bulk of this paper into paper bags, including ordinary brown grocery bags and specialty bags.

Stepping Stones

Important dates in the 50-year history of the International Paper Co.:

1898: International Paper Co. was incorporated on January 31, 1898, bringing together 20 pulp and paper mills in Maine, New Hampshire, Vermont, Massachusetts and New York. Total production that year was nearly 400,000 tons. More than 90 percent of mill capacity was newsprint.

1913: Philip T. Dodge was elected president in January, 1913, and served until May, 1924.

1916: The member of the International family, now known as Canadian International Paper Co., was incorporated in Quebec.

1917: Construction was begun on Canadian International newsprint mill at Three Rivers, Quebec. This mill was to become the largest newsprint mill in the world.

1922: Three Rivers mill of Canadian International Paper Co. began operations.

1923: company inaugurated group insurance program.

1924: Archibald R. Graustein elected president.

1925: Bastrop Mill, built by Richard J. Cullen, was purchased, marking entry of International into the great Southern kraft field.

Canadian International acquired, through the Riordan purchase, the Kipawa and Hawkesbury mills in Canada, mill sites, waterpower sites, and some 10,000 square miles of timber limits. Kipawa was the first mill designed and equipped for exclusive manufacture of dissolving woodpulp. Also acquired in connection with this purchase was the Ticonderoga mill in New York.

Canadian International began construction of the Gatineau newsprint mill.

1927: International acquired the Louisiana mill at Bastrop, built by Richard J. Cullen, and brought Mr. Cullen into the company.

Gatineau newsprint mill of Canadian International began operations.

International acquired control of a company manufacturing multiwall shipping sacks.

1928: Camden, Ark., mill was built. This was the first Southern kraft mill constructed by International.

Moss Point, Miss., mill, built in 1912, was acquired.

1929: Mobile, Ala., kraft paper mill began operation.

International Envelope Corp., a subsidiary, acquired plant in Dayton, Ohio, which manufactures stamped envelopes for U. S. Post Office.

1930: Newsprint mill at Dalhousie, N. B., owned by New Brunswick International Paper Co., began operation.

1931: International bought Tonawanda Mill, in North Tonawanda, N.Y.—newest mill of the company in the U. S. North.

The same year the Panama City, Fla., mill began producing kraft container board on a modern mass-production basis for the first time, opening big new market for company.

1934: Moss Point mill rebuilt to produce bleached kraft wrapping and specialty papers.

1936: Richard J. Cullen became president.

1937: Two container board machines completed at Georgetown, S. C., mill .

1938: Springhill, La., mill completed.

1940: International entered shipping container field, acquiring company with plants at Whippany, N. J., Somerville, Mass., Chicago, Ill., and Kansas City., Kan.

1942: No. 3 machine installed at Georgetown mill, bringing daily capacity up to 1,350 tons of container board and making Georgetown world's largest single paper mill. Georgetown shipping container plant completed.

1943: Mr. Cullen elected chairman of the corporation; succeeded as president by John H. Hinman.

1945: Company inaugurated retirement plan for employes.

1946: Canadian International set up retirement plan for employes.

Single Service Containers, Inc., manufacturer of paper milk containers, acquired.

Container Plant at Springhill, La., delayed by the war, virtually completed.

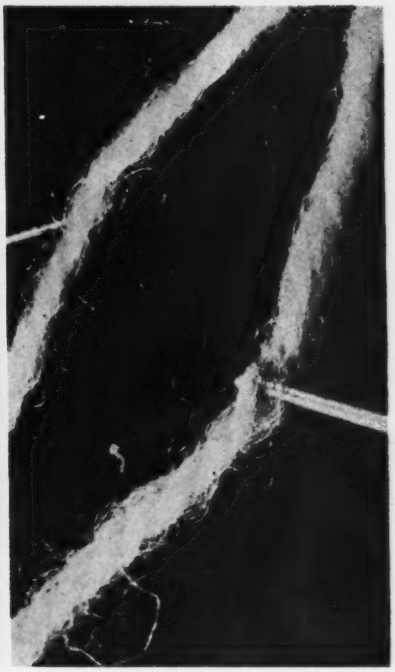
Shipping container plant at St. Louis, Mo., acquired.

1947: Shipping container plant at Los Angeles,

(A)
Treated Wool Fiber

(B)
Untreated Wool Fiber

(C) UNTREATED wool yarn tangles and fluffs, which leads to early matting and slower drainage.



(D) CHEMICALLY-TREATED wool yarn holds its shape and in a felt stays open and porous longer.

LESS MATTING—LESS WASH-UP

Like a pig's tail, a fiber of wool tends to curl. Treat it chemically and it becomes fairly straight. *(Photos A and B)*

Group many woolen fibers to form a strand and they'll curl, intertwine, and tend to mat when untreated—or stay fairly straight and remain open and more porous when treated. *(Photos C and D)*

Therein lies the difference between standard and chemically treated felts (Orr-Chems). That's why Orr-Chems—

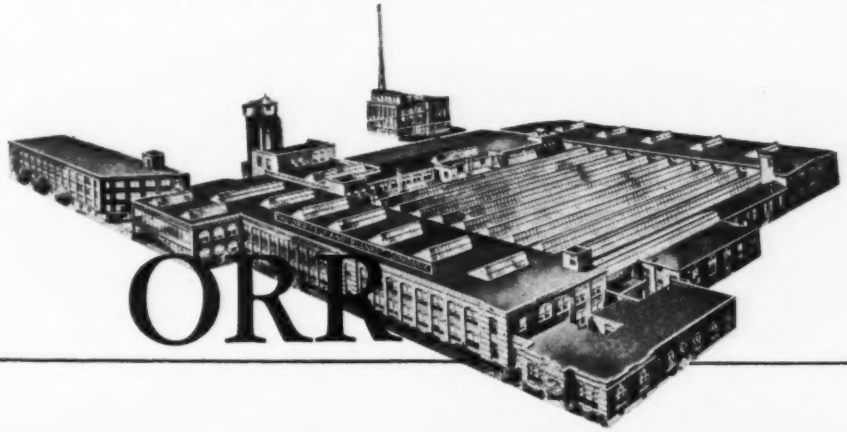
(a) Go on easier; (b) Set to the machine more readily; (c) Permit machines to reach top speeds sooner; (d) Have high drainage characteristics; (e) Mat far more slowly; (f) Force the machine down for wash-ups far less frequently.

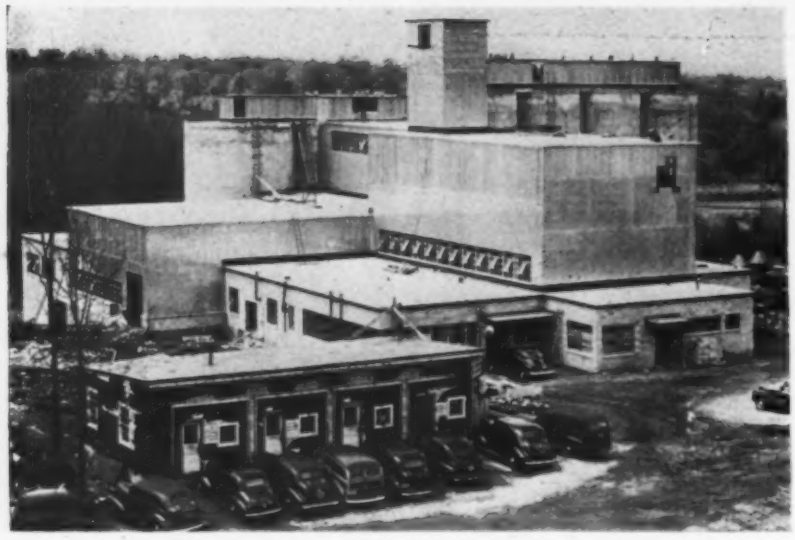
Mills interested in more satisfactory felts from the operation standpoint, in felts that cost less per ton of production, should line up with the many mills already using Orr-Chem felts.

ORR FELT LINE, A COMPLETE LINE:

- STANDARD ORRS—untreated felts
- ORR-CHEM FELTS—chemically treated
- COTTON WARP for cement and asbestos products

THE ORR FELT & BLANKET CO., PIQUA, OHIO





NEW TALC-PLANT TO START AUGUST 1

THE TALC GRINDING PLANT being built by the Gouverneur Talc Co., Gouverneur, N. Y., a subsidiary of the R. T. Vanderbilt Co., New York City, is expected to be operating about August 1. . . . Special grinding equipment will be installed and some grades of talc will be made with a particle size of about one micron and a color brightness standard of over 90, which can be used where special whiteness is desired. . . . A feature of the plant layout is the use of large bins or silos for storing finished products and ore in process. Plant will have a capacity of about 250 tons a day. . . . At the mine adjoining the plant, the head frame ironwork is completed, the change house is under erection and the hoist and compressor house and large conveyor started. . . . The shaft is down more than 300 feet (about half-way) and a 300-foot level is established. . . . James Stewart Co., of New York is building the plant; Underpinning & Foundation Co., of New York, doing the mine shaft work.

Calif., acquired.

Company paid off final balance of term bank loan, leaving it free of funded debt for the first time in its history.

1948: Company rounded out its first 50 years on January 31.

Alert top management accounts for International notable growth. Three men among many, whose roles are important in this respect, are Chairman Cullen, President Hinman and First Vice-President Weaver.

Richard J. Cullen

Richard J. Cullen has been chairman of the corporation of International Paper Co., since 1943.

From the outset of his career, Mr. Cullen has been associated with the paper industry. He was one of the first to open the resources of southern woodlands for making kraft paper. Later, he again pushed back the technological frontier in the South by recognizing the commercial possibilties of mass-producing kraft container board on Fourdrinier machines For 30 years he has been one of the major figures responsible for the development of an industry which has been of ncalculable value to the social and economic well-being of the South.

As a young mechanical engineer, Mr. Cullen was employed in the engineering department of the Riordon Paper Mills, Ltd., his first assignment being in connection with reconstruction of the Riordon pulp mill at Merritton, Ont. He later designed and supervisod construction of the Riordon Mill at Hawkesbury, Ont. In 1909 he came to the U. S. as manager of the Cushnoc Paper Co., in Augusta, Me.

Some years later, Mr. Cullen became interested in the possibility of manufacturing kraft pulp and paper in the Southern states. The first kraft paper mill in the South had been built at Orange, Tex., in 1910, but the important development in kraft paper did not come until the 1920's.

In 1918, Mr. Cullen became vice president and general manager of the Louisiana Fibreboard Co., of Bogalusa. He remodeled the mill which was later sold to the Great Southern Lumber Co.

He designed the plant of the Century Roofing Co. of New Orleans and later negotiated a consolidation of this company with the Richardson Paper Co. of Lockland, Ohio.

In 1920, Mr. Cullen designed and built the Bastrop Pulp & Paper Co. mill at Bostrop, La., to make kraft pulp and paper. As soon as this mill began operating, he designed and built the Louisiana Pulp & Paper Co. mill, also in Bastrop.

Bastrop and Louisiana Mills operated independently until 1925, when International purchased the Bastrop Mill. Two years later International acquired the Louisiana Pulp & Paper Co. Mill, and at that time Mr. Cullen joined the International family as president of Southern International Paper Co. Later he became president of its successor, Southern Kraft Corp. He was elected vice-president of International Paper in 1927 and continued in charge of Southern Kraft operations until 1935, when he was appointed manager of manufacture of all of International mills.

In 1927, under Mr. Cullen's direction, the company began construction of the mill at Camden, Ark., the first Southern Kraft Mill built by International. It was completed early in 1928. Also, in 1928, the Moss Point, Miss., mill, constructed in 1912, was acquired and remodelled by the company. In 1929, under Mr. Cullen's supervision, the company built the Mobile, Ala., mill which began production of kraft paper the same year.

During the late 1920's, Mr. Cullen had become interested in the possibilities of mass-producing on all-kraft board for shipping containers on Fourdrinier paper machines. The Panama City mill, designed by Mr. Cullen, was the first kraft mill to be devoted exclusively to container board production. Its present capacity is 900 tons per day.

Mr. Cullen became a director of International Paper Co. in January, 1936. A few weeks later he was elected president and in 1943 chairman, when he was succeeded as president by Mr. Hinman.

John H. Hinman

John H. Hinman was born at North Stratford, N. H., October 2, 1885. He graduated from Dartmouth in 1908, five years later becoming associated with the International Paper Co. when he was employed as woods manager of the American Realty Co., an International subsidiary.

In 1927 he was appointed general woods manager in charge of all timberland and woods operations, and the following year was elected a vice-president.

In May of 1935 he became vice-president of Canadian International, with headquarters in Montreal. In January of 1938, he was elected president.

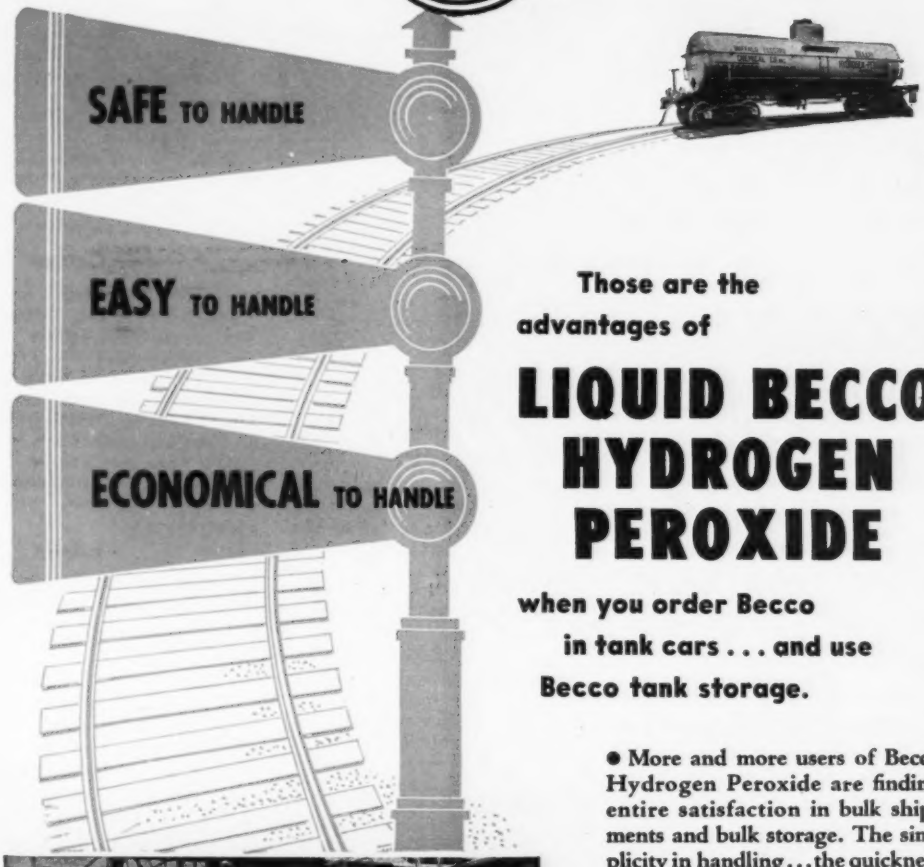
In 1939, Mr. Hinman left Montreal and returned to New York. Four years later he succeeded Mr. Cullen as president.

Harrison R. Weaver

Harrison R. Weaver, first vice-president has held that position since May 12, 1943. He has been with the company longer than any of the other officers.

Born in Utica, N. Y., October 25, 1888, Mr. Weaver was graduated from Cornell in 1909 and was employed by the International Paper Co., as an accountant on January 6, 1913.

Four years later, on May 1, 1917, he became manager of accounts. When International Paper & Power Co. was formed in 1929 he was eletced a vice-president and the following year was made treasurer also, taking over the same positions in the present International Paper Co. after its organization in 1941. On May 12, 1943 he was elected first vice-president. He continued to serve as treasurer, also, until May 14, 1946. He has been a director since 1936.



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LIQUID BECCO HYDROGEN PEROXIDE

when you order Becco in tank cars . . . and use Becco tank storage.

● More and more users of Becco Hydrogen Peroxide are finding entire satisfaction in bulk shipments and bulk storage. The simplicity in handling . . . the quickness of transfer . . . adds greatly to production and subtracts substantially from costs. 40,000 lbs. in 1½ hours can be handled through the turning of a valve and the pushing of a button.

Becco's fleet of tank cars is the largest in the hydrogen peroxide industry. Becco's representatives will arrange and plan with you for the most efficient tank storage.

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TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 16, 1948.

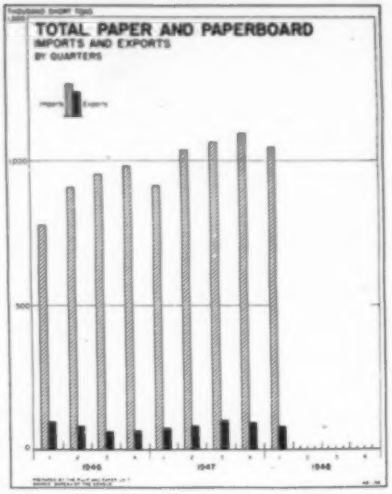
April production of paper and paper board, at 96.0 percent of production base, amounted to 1,906,093 tons in April 1948, which was only 23,530 tons less than record production of March, according to the Department of Commerce report. Production rate, however, was 1.8 percent higher on a slightly greater base, reflecting the new capacity.

Wood pulp production amounted to 1,078,361 tons in April and exceeded the output of any other month on record except March, 1948. Wood pulp inventories increased at integrated and partially integrated paper and board mills in April over March but decreased at non-integrated mills. In the latter class, the principal decreases were in bleached sulphite and unbleached sulphate, due chiefly to lower receipts of imported pulp from overseas, a seasonal drop. At the end of April, the pulp purchasing mills had in excess of two months' supply on hand.

Paper merchants, as well as most mill executives, the Department finds, are optimistic concerning the remainder of 1948. "The consensus appears to be that the market with respect to supply, demand, inventories, and prices has leveled off but will keep on a more modest upward trend than the plotted chart lines have shown since the end of 1945. In other words, the production and supply of paper, paper board and products will keep pace henceforth with over-all industrial and economic activity which is expected to advance slowly but steadily the rest of this year. Hence, a steady market is anticipated for several months ahead. The apparent leveling off in overall paper demand in the first quarter of 1948 may be explained in large measure by the leveling off of national purchasing power in terms of physical volume. Personal consumption expenditures were at an annual rate of 173 billion dollars in the first quarter of 1948. The increase from the last quarter of 1947 was the smallest quarterly increase since the end of the war, confirming qualitative information indicating a flattening in consumer demand."

Newsprint

A leading British trade journal aired its feeling about British newsprint and Marshall plan aid in a recent editorial, saying that one aspect of the situation is the present low rate of production of British newsprint and its effect on the industry. If instead of bringing into the country 5½ million pounds sterling worth of newsprint, one-half the money could be spent in bringing pulp in, then the world's largest newsprint machine at Kemsley — idle since 1939—and two other big machines, also shut down, could be put back into production and numbers of young paper makers set to work again on their pre-war jobs.



Waste Paper

Consumption of waste paper by paper and paper board mills is well ahead of the comparable period of 1947 with mill receipts likewise well ahead, the Eastern Conservation Committee reports. During April, paper mills consumed 146,386 tons, paperboard mills 533,886 tons, wet machine board mills 4,934, a total of 685,206 tons. It is expected that a new high record for consumption will have been set when the mills close for the Fourth of July weekend—which also marks the beginning of shutdowns for vacations and repairs. And while it is anticipated that the mills will purchase sufficient supplies of waste paper in the next few weeks to carry them through the summer months, the New York market continues quiet with only pulp substitute grades showing steady movement. Old corrugated has slow down to some degree, *book* and *ledgers* are soft, and *mixed* and *folded news* are in heavy supply despite diminished collections. Prices are steady and quotably unchanged.

Collection activity through schools and volunteer organizations has now reached a seasonal ebb and will shortly suspend until the Fall. Peddlers finding it increasingly difficult to dispose of their "take" to packers have diverted their efforts to the more profitable peddling of fresh vegetables and fruits. Thus the seasonal heavy flow of collections has begun to dry up earlier than usual.

Emphasis continues to be placed on quality of sorting and packing, and it is expected that dealers who can provide waste paper properly sorted and efficiently packed will find ready sale.

Meanwhile, recognizing the potential of foreign markets to the waste industry—reported in this column April 15—the NAWMD organized its committee to study requirements for import and export trade and to improve relations with foreign buyers—further details reported elsewhere in this issue.

Cottons

Demand and supply for new cuttings maintains a steady though quiet market. A soft undertone is noted however because of the approach of the summer season of limited activity, also because of the easier demand for rag-content papers, which may be sustained in the Fall. Prices are unchanged.

Old rags too are on a dull buying market, but with collections barely adequate to demand, prices continue steady.

Indexes

Index of general business activity for the week ended June 7 dipped to 146.0 from 151.7 in the preceding week, compared with 145.1 in the corresponding week of 1947.

Index of paperboard production fell to 196.1 from 203.4 in the preceding week, compared with 179.7 in the corresponding week of 1947.

Comparative indexes for paper and paper board production as reported by AP & PA are shown in Table I.

Esso Tervan 2800 Bulletin

NEW YORK—Esso Standard Oil Co. has prepared an eight-page typewritten bulletin on the subject of its Tervan 2800, which it is stated has various applications in the manufacture of frozen food packages, paper milk cartons and bread wraps. A copy of the bulletin may be had by writing to John B. Tuttle, engineering division, Esso Standard Oil Co., 15 West Fifty-First Street, New York 19, N. Y., requesting "Technigram, Industrial Edition, May 12, 1948."

Table I—Index of Paper and Paper Board Production

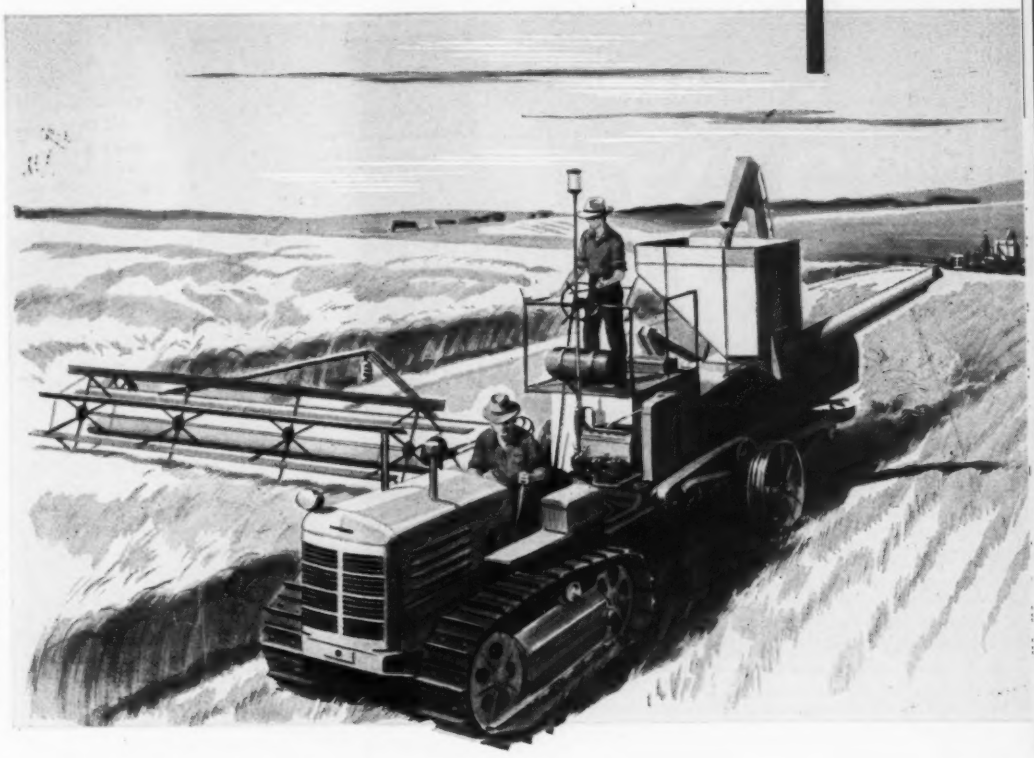
	June 5, 1948	May 29, 1948	June 7, 1947	June 8, 1946	June 9, 1945
Paper *	95.2	98.9	106.7	104.0	92.8
Paperboard	87.0	100.0	98.0	96.0	97.0

* Tonnage production was 1.1 percent greater than last year's, although because of 13.3 percent increase in 1948 capacity, this year's production ratio is lower.

Paperboard Production Statistics

	For Weeks Ended		
	June 5, 1948	May 29, 1948	June 7, 1947
Production	168,802	191,650	171,855
New Orders	222,226	180,297	217,658
Unfilled Orders	402,625	352,013	552,280

Percent of Activity—Current 87%.
Percent of Activity—Year To Date 101%.



it looks easy...now

As you watch a huge modern harvester-thresher at work you are impressed with the speed and efficiency of its performance. But behind this performance are decades of pioneer effort and painstaking development. This is true of practically all modern industrial achievements. It is true of modern electro-chemical products, many of which were produced for the first time in this country by Niagara Alkali Company and groomed to amazingly accurate standards of quality, uniformity and efficiency by continuous pioneering research on the part of Niagara. This pioneering has made Niagara "An Essential Part of America's Great Chemical Enterprise."

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N.Y.

LIQUID CHLORINE • CAUSTIC POTASH • CARBONATE OF POTASH • PARADICHLOROBENZENE • CAUSTIC SODA • NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)

IMPORTS

NEW YORK IMPORTS

WEEK ENDING JUNE 12, 1948

SUMMARY

Newsprint	15,565 rolls
Wrapping Paper	12 cs., 232 rolls
Oiled Paper	1 cs.
Packing Paper	30 rolls
Photo Paper	4 cs., 103 pkgs.
Printing Paper	1 cs.
Wall Paper	71 cs.
Towels	1 cs.
Serviettes	10 bls., 10 crts.
Drawing Paper	16 cs.
Tissue Paper	15 cs.
Gummed Paper	31 cs.
Filter Paper	95 bls.
Pasteboard Fibres	50 bdls.
Coated Paper	95 cs.
Miscellaneous Paper	1 cs.

Newsprint

N. Y. World Telegram, Stuart Prince, Cornerbrook, 824 rolls.

N. Y. Sun, Stuart Prince, Cornerbrook, 1141 rolls.

Clinton Paper Corp., Stuart Prince, Cornerbrook, 743 rolls.

Gilman Paper Co., Stuart Prince, Cornerbrook, 194 rolls.

R. A. Olsen, A. C. D., Donnacona, 387 rolls.

Walker Goulard Plehn Co., Jasper F. Cropsey, Rotterdam, 2 rolls.

Montmorency Paper Co., Marit Maersk, Botwood, N. F., 1604 rolls.

R. A. Olsen, G. T. D., Donnacona, 359 rolls.

H. G. Craig Co., Kermic, Donnacona, 356 rolls.

Pagel Horton & Co., Inc., Ranenfjord, Brevik, 578 rolls.

H. G. Craig Co., Newscarrier, Donnacona, 414 rolls.

N. Y. Journal American, Markland, Liverpool, N. S.

N. Y. Herald Tribune, Markland, Liverpool, N. S., 1749 rolls.

N. Y. World Telegram, Markland, Liverpool, N. S., 708 rolls.

Brooklyn Daily Eagle, Markland, Liverpool, N. S., 684 rolls.

Herald Statesman, Inc., Markland, Liverpool, N. S., 112 rolls.

Richmond Newspapers, Inc., Markland, Liverpool, N. S., 1862 rolls.

Price & Pierce, Ltd., Markland, Liverpool, N. S., 112 rolls.

N. Y. Sun, African Prince, Cornerbrook, 1079 rolls.

N. Y. World Telegram, African Prince, Cornerbrook, 1389 rolls.

Clinton Paper Corp., African Prince, Cornerbrook, 814 rolls.

R. A. Olsen, G. D. D., Donnacona, 384 rolls.

Malmar Paper Co., Macalester Victory, Trieste, 70 rolls.

Wrapping Paper

E. De Vries Co., Macalester Victory, Trieste, 232 rolls.

Parfums Corday, Inc., Washington, Havre, 12 cs.

Oiled Paper

Atlantic Forwarding Co., Jefferson City Victory, Antwerp, 1 cs.

Packing Paper

(———), Pres. Fillmore, Genoa, 30 rolls.

Photo Paper

J. J. Gavin Co., Red Jacket, London, 4 cs. (unsensitized).

Lep Transport, Inc., Red Jacket, London, 100 pkgs. (base).

(———), Red Jacket, London, 3 pkgs.

Printing Paper

Person & Weidhorn, Red Jacket, London, 1 cs.

Wallpaper

All Transport, Inc., Washington, Havre, 71 cs.

Towels

(———), Red Jacket, London, 1 cs.

Serviettes

(———), Red Jacket, London, 10 bls.

(———), Media, Liverpool, 10 crates.

Drawing Paper

Chicago Cardboard Co., Red Jacket, London, 1 cs.

(———), Red Jacket, London, 1 cs.

Winsor Newton, Inc., Red Jacket, London, 3 cs.

E. R. Hall & Vanderpoorten, Sobieski, Genoa, 11 cs.

Tissue Paper

B. F. Drakenfeld & Co., Media, Liverpool, 15 cs. (pottery).

Gummed Paper

B. F. Drakenfeld & Co., Media, Liverpool, 31 cs.

Filter Paper

J. Manheimer, St. Malo, Bordeaux, 95 bls.

Pasteboard Fibres

Manufacturers Trust Co., St. Malo, Bordeaux, 50 bdls.

Coated Paper

F. P. Gaskell, American Manufacturer, Glasgow, 95 cs. (for cigarette tips).

Miscellaneous Paper

(———), Kurikka, Helsinki, 1 cs.

Bulkley Dunton Co., Veendam, Rotterdam, 1 cs.

Rags, Baggings, Etc.

1st National Bank of Boston, Macalester Victory, Venice, 124 bls. paperstock.

Atlas Waste Manufacturing Co., Agwiking, Havana, 12 bls. cotton waste.

A. de Vries Trading Corp., West Linn Victory, Antwerp, 52 bls. old rags.

E. J. Keller Co., Inc., West Linn Victory, Antwerp, 78 bls. old bagging.

Royal Manufacturing Co., West Linn Victory, Antwerp, 104 bls. cotton waste.

Smith & Bird, Jefferson City Victory, Antwerp, 255 bls. jute waste.

Castle & Overton, Inc., Jefferson City Victory, Antwerp, 95 bls. jute waste.

Great Eastern Packing & Paperstock Corp., African Prince, Cornerbrook, 283 bls.

Scrap Paper Wrappers

Irving Trust Co., Red Jacket, London, 64 bls. old khaki webbing.

Surplus Corp. of America, Ashburton, Avonmouth, 56 bls. paperstock.

(———), Media, Liverpool, 17 bls. new wool rags.

American Express Co., Media, Liverpool, 8 bls. new wool rags, 51 bls. wool thread.

Waste

J. Reiss, Agwicomet, Havana, 7 bls. colored cotton rags.

A. de Vries, St. Malo, Dunkirk, 209 bls. old scrap bagging.

J. J. Rozendal, Inc., St. Malo, Dunkirk, 75 bls. mixed old bagging.

Castle & Overton, Inc., St. Malo, Bordeaux, 143 bls. old cotton rags.

New England Waste Co., Tamara, Shanghai, 100 bls. cotton waste.

M. O. Schimmel Corp., Tamara, Shanghai, 135 bls. cotton waste.

Corn Exchange Bank Trust Co., Exchange, Cochin, 100 bls. old jute rags.

Lush Cotton Products Corp., Exchange, Cochin, 100 bls. cotton waste.

New England Waste Co., Exchange, Cochin, 500 bls. cotton waste.

New England Waste Co., Exchange, Bombay, 75 bls. cotton waste.

(———), Exiria, Leghorn, 60 bls. old khaki cotton rags.

J. P. Fleisig, Exiria, Leghorn, 185 bls. old dark cottons.

Herman Adlerstein, Exiria, Genoa, 51 bls. jute rags.

Manufacturers Trust Co., Exiria, Genoa, 100 bls. old waste bagging.

China Trade & Industrial Service, Inc., Durango Victory, Shanghai, 400 bls. cotton waste.

C. Comiter, Durango Victory, Shanghai, 100 bls. cotton waste.

New England Waste Co., Durango Victory, Shanghai, 100 bls. cotton waste.

Melschiors, Inc., Durango Victory, Shanghai, 413 bls. cotton waste.

Continental Bank Trust Co., Clan Murray, Alleppy, 50 bls. old jute rags.

Old Rope

(———), Exchange, Rangoon, 185 bls. old hemp rope cuttings.

China Clay

J. W. Higman Co., Ashburton, Avonmouth, 498 tons 7 cwt.

Gluestock

Transatlantic Animal By-Products Corp., Media, Liverpool, 297 bags.

Casein

Casein Co. of America Div. of The Borden Co., Mormacport, Buenos Aires, 1000 bags (ground lactic).

Woodpulp

Price & Pierce, Ltd., Markland, Liverpool, N. S., 2264 bls. unbleached sulphite pulp.

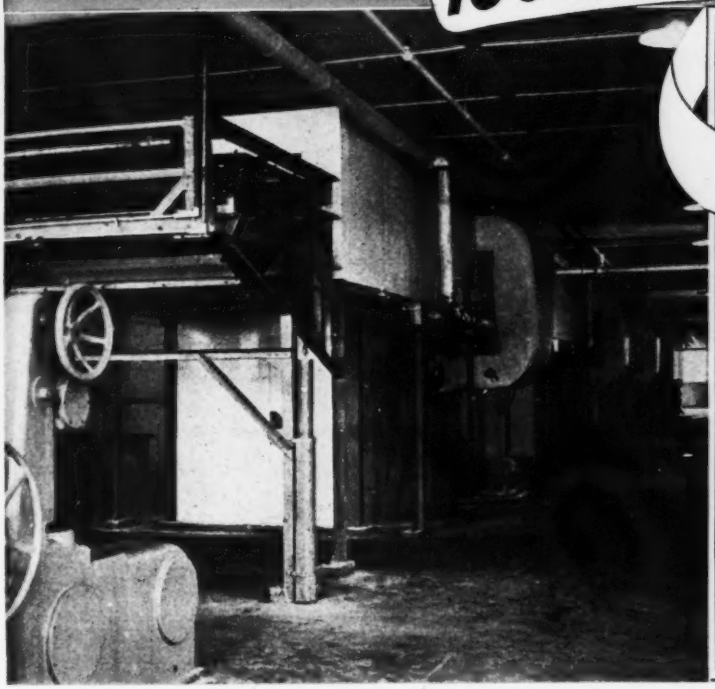
Philadelphia Imports

J. H. Weil Co., American Manufacturer, Liverpool, 16 cs. tracing cloth.

National Casein Sales Co., Red Jacket, Bordeaux, 2032 bags casein.

at NEWTON FALLS PAPER MILL

"Microjet" Coated Paper Is Air Dried At Speeds Up To 1000 Feet Per Minute



WITH MODERN ROSS Straight Pass Air Dryers

The first of its kind to be installed, the new "Microjet" coating line at Newton Falls Paper Mill at Newton Falls, N. Y. has set an entirely new standard for coating quality and speed.

Coating on a 25 x 38 (500) ream basis applied in weights of four to twelve pounds is applied and dried at speeds up to 1,000 feet per minute with the new coating line consisting of Waldron Microjet coating equipment and the ROSS Straight Pass Air Dryers illustrated above.

Two ROSS Air Dryers are now in operation in this mill. Each is 150 feet long, and divided into four temperature zones, each with independent control of heat and air. Special instruments control the moisture in the dried paper and regulate the amount of steam delivered to each zone heater. For maximum steam economy, most all of the air is recirculated.

Since this initial installation 6 other Microjet Coaters and ROSS Air Dryers have been put into operation in other mills and additional units are being manufactured.

ROSS SYSTEMS

J. O. ROSS ENGINEERING CORPORATION

MANUFACTURERS OF AIR PROCESSING SYSTEMS

350 MADISON AVENUE NEW YORK 17, N. Y.

201 N. Wells Street, CHICAGO-6 • 79 Milk Street, BOSTON-9 • 9225 Grand River Avenue, DETROIT-4 • 1231 E. Seventh Street, LOS ANGELES-21

ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL 19, CANADA • CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

PRICES

The quotations given below are indicative of trends in an open market. At the moment they can be of little more value, for while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—
Rolls, contract .... $93.00/$96.00
Sheets 108.00/109.00

Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00/	—
No. 1 Wrapping	7.25/	8.00
Standard Wrapping	6.50/	—
Standard Bag	6.50/	—

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.84/	$2.00
Wh. No. 1 M. G.	1.94/	2.00
Wh. No. 1½	1.60/	—
Wh. No. 2	1.75/	—
Kraft Anti-Tar	1.65/	—
Kraft Unbl.	1.85/	—
Manila No. 2	1.62/	—
Shred. Wh. No. 1 cwt.	1.10/	1.50

Toilet—Per Case of 100 rolls 1 M Sheets.

Unbleached	$8.50/	$10.00
Bleached	8.50/	10.00

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15

Manila—per cwt.—C-l. f.a.

No. 1 Jute Tag	$14.50/	—
Reg. Jute Manila	13.25/	$15.50
No. 1 Manila	9.75/	—
5 lb. Manila	10.75/	11.25

Boards, per ton—

Plain News	$92.50/	—
Filled News	94.00/	—
Plain Chip	90.00/	—
Sgl. Mla. L-d. Chip*	100.00/	102.50
White Pat. coated*	120.00/	—
Kraft Liners 42 lb.	100.00/	—
Kraft Corr. .009	105.00/	—
Binders Boards	126.00/	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delievered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. North. Kraft	125.00/130.00
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Kraft	185.00/195.00
Bleached Sulphite	185.00/195.00
Unbleached Sulphite	130.00/175.00
Unbleached Kraft	140.00/147.50

Finnish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commision)

White Shirt	$11.50/$12.00
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.	
No. 1 Whites Repacked	$5.50/	$6.00
No. 1 Whites Miscellaneous	4.50/	5.00
No. 2 Whites Repacked	3.50/	3.75
No. 2 Whites Miscellaneous	3.00/	3.50
Blue Overalls	3.75/	4.00
Thirds and Blues Repacked	3.25/	3.50
No. 1 Roofing Rags	1.70/	1.80
No. 2 Roofing Rags	1.60/	1.70
No. 3 Jute Bagging	1.50/	1.60
No. 4 Brussels and hard back carpets	1.50/	1.60
No. 5A Roofing Rags	1.50/	1.60

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N.Y.)

	Per 100 lbs.	
New Dark Cuttings	$5.50/	$5.75
New Mixed Cuttings	6.25/	6.50
Light Silesias	9.25/	9.50
Light Flannelettes	9.25/	9.50
New White Cuttings	12.00/	13.00
New Unbleached Cuttings	12.25/	13.00
Fancy Shirt Cuttings	6.50/	7.00
Light Prints	7.75/	8.00
Bleachable Khaki, No. 1	7.00/	7.50
Unbl. Khaki, No. 1	6.25/	6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.	
No. 1 White Linens	$14.00/	$16.00
No. 2 White Linens	12.00/	13.00
No. 3 White Linens	8.00/	9.00
No. 4 White Linens	8.00/	9.00
No. 1 White Cottons	8.00/	10.00
No. 2 White Cottons	7.00/	8.00
No. 3 White Cottons	6.00/	6.50
No. 4 White Cottons	4.00/	4.50
Extra Light Prints	6.50/	7.00
Old Light Prints	4.50/	5.00
Med. Light Prints	4.00/	4.50
Dutch Blue Cottons	5.25/	5.50
Checks and Blues	4.00/	4.25
Linsey Garments	2.35/	2.50
Dark Cottons, European	2.30/	2.35
Dark Cottons, Egyptian	3.25/	3.50
Old Shopperies	2.20/	2.30
New Shopperies	2.25/	2.30

Bagging

(Prices to Mill, f.o.b. N.Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	$6.75/	$7.25
Domestic Gunny, No. 1	6.75/	7.25
Heavy Wool Tares	6.25/	6.50
No. 1 Scrap Bagging	5.50/	5.75
Roofing Bagging	1.50/	1.75
Foreign Manila Rope	6.00/	6.75
Domestic Manila Rope	6.50/	6.75
Jute Strings	5.00/	5.25
No. 1 Sisal Strings	5.25/	5.50
Mixed Strings	1.75/	2.50

Waste Paper

Base Prices to Mills for Average Packings
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 155.00
No. 1 Hard White Shavings, unruled	140.00/ 150.00
No. 1 Hard White Shavings, ruled	110.00/ 130.00
Soft White Shavings, one cut	140.00/ 150.00
No. 1 Soft White Shavings	125.00/ 135.00
Soft White Shavings, Misc.	115.00/ 125.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Groundwood Fly Leaf Shavings	35.00/ —
N. 1 Heavy Books & Magazines	25.00/ 26.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Col. Ledger	55.00/ 60.00
Manila Tab. Cards	95.00/ 100.00
New Manila Envelope Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mixed Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	100.00/ 110.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corrugated Containers	35.00/ 40.00
Old Corrugated	23.00/ 25.00
No. 1 News	11.00/ 12.00
No. 1 Mixed Papers	9.00/ 10.00
Box Board Cuttings	— / —
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Mill Wrappers	22.00/ 24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—		
India	.34½/	.35¾
Fine Polished		
Fine India	.41¼/	.45
Unpolished—		
Paper Makers	.31 /	.33½
Tube Rope	.29¾/	.32¼
Wrapping	.32¾/	.36½
Cotton	.63¼/	.66¾

(Hard Fiber)

Mex. Sisal	.21 /	.27
Manila (Reprocessed)	.30 /	.32

(American Hemp)

Polished Hemp	.36¾/	.60
Unpolished	.32¼/	.54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—		
New White No. 1	.11 /	.12
New White No. 2	nominal	
Light Silesias	.07½/	.08
Black Silesias, soft	.06½/	.07
New Unbleached	.10½/	.11¼
Washable Prints	.06½/	.07
Washable No. 1	.05 /	.05½
Blue Overall	.07¼/	.08
Cottons—According to grade—		
Washable Shredding	.03½/	.04
Fancy Percales	.06¾/	.07¼
New Black Soft	nominal	
Khaki Cuttings—		
Unbleachable Cotton Cuttings	.06 /	.06½
Bleachable Cotton Cuttings	.07 /	.07½
Men's Corduroy	.05½/	.06
Ladies' Corduroy	.05 /	.05½
Cottonades	.05½/	.06

Domestic Rags (Old)

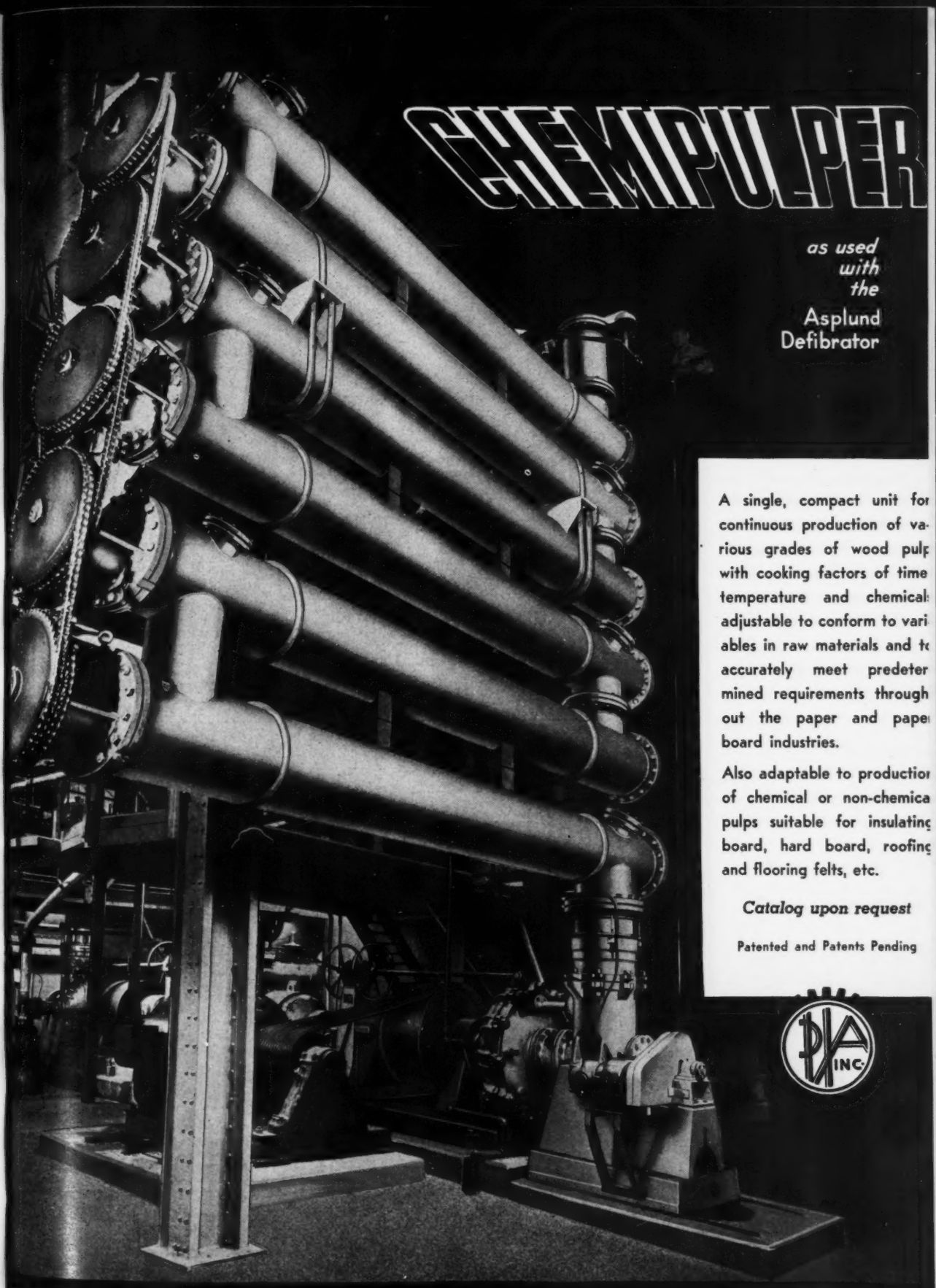
(F.O.B. Eastern Shipping Point)

White No. 1 —Repacked	4.50 /	5.00
Mixed White	4.00 /	4.25
White No. 2—Repacked	3.50 /	3.75
Thirds and Blues—		
Miscellaneous	2.25 /	2.50
Repacked	2.75 /	3.00
Roofing Stock—		
Foreign No. 1	nominal	
Domestic No. 1	1.85 /	1.90
Domestic No. 2	1.75 /	1.80
Roofing Bagging	1.65 /	1.70
Old Manila Rope	6.25 /	6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—		
Foreign	nominal	
Domestic	4.75 /	5.25
No. 1 Clean Bright—Sisal Strings	.04½/	.05
No. 2 Clean Bright—Sisal Strings	.03½/	.04
Sisal Jute	.02¾/	.03
Scrap—		
No. 1	5.00 /	5.50
No. 2	2.50 /	3.00



CHEMIPULPER

as used with the
Asplund Defibrator

A single, compact unit for continuous production of various grades of wood pulp with cooking factors of time temperature and chemicals adjustable to conform to variables in raw materials and to accurately meet predetermined requirements throughout the paper and paperboard industries.

Also adaptable to production of chemical or non-chemical pulps suitable for insulating board, hard board, roofing and flooring felts, etc.

Catalog upon request

Patented and Patents Pending

PAPER and INDUSTRIAL APPLIANCES, INC

22 EAST 42 STREET • NEW YORK 17, N. Y

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/	$115.00
No. 1 Hard White Shavings, unruled	100.00/	—
Soft White Shavings, One cut	90.00/	95.00
White Blank News	75.00/	—
Soft White Shavings	80.00/	—
No. 1 White Ledger	85.00/	90.00
No. 1 Heavy Books & Magazines	24.00/	26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00/	—
No. 1 Assorted Old Kraft	60.00/	65.00
No. 1 Mixed Paper	11.00/	12.00
Box Board Cuttings	10.00/	11.00
Kraft Corrugated Cuttings	90.00/	100.00
Old Corrugated	24.00/	26.00
Overissue News	20.00/	22.00
No. 1 News	13.00/	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	/ 6.75
No. 1 Hard White Shavings, ruled	6.00	/ 6.50
Soft White Shavings, Misc.	6.00	/ 6.25
No. 1 Fly Leaf Shavings	—	/ —
No. 2 Fly Leaf Shavings	4.25	/ —
No. 1 Groundwood Fly Leaf Shavings	1.75	/ 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	/ 1.75
Mixed Colored Shavings	2.00	/ 2.25
New Manila Envelope Cuts, one cut	4.50	/ 4.75
Hard White Envelope Cuts, one cut	7.00	/ —
Triple Sorted No. 1 Brown Soft Kraft	3.75	/ 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	/ 4.25
Kraft Envelope Cuttings	5.00	/ 5.50
No. 1 Heavy Books & Magazines	1.75	/ —
New Manila Envelope Cuttings, one cut	—	/ —
New Manila Envelope Cuttings	4.00	/ 4.25
White Tabulating Cards	5.00	/ —
Groundwood Tabulating Cards	1.50	/ 1.75
White Blank News	2.25	/ 2.50
No. 1 Assorted Old Kraft	3.50	/ 4.00
No. 1 Mixed Paper	.47½/	—
Overissue News	.90	/ 1.00
No. 1 News	.55	/ .60
Box Board Cuttings	.60	/ .70
New Corrugated Cuttings, Kraft	2.75	/ 3.00
Old Kraft Corrugated Containers	2.00	/ 2.25
Old Corrugated Containers	—	/ 1.10
Jute Corrugated Cuttings	1.07½/	—
Paper Strings	2.00	/ 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	/ 4.75
Domestic	6.25	/ 6.50
Sisal Rope No. 1	6.25	/ —
Sisal Rope, No. 2	5.50	/ —
Mixed Rope	3.00	/ —
Mixed Strings	1.60	/ —
Transmision Rope—		
Foreign	nominal	
Domestic	3.00	/ 3.50
Manila Rope—		
Foreign	nominal	
Domestic	6.50	/ —
Soft Jute Rope	6.25	/ 6.50
Jute Carpet Threads	6.00	/ —
Bleachery Burlap	—	/ 7.00
Scrap Burlap—		
Foreign	6.00	/ 6.25
Domestic	6.00	/ 6.25
South America	6.00	/ 6.25
Wool Tares		
Foreign	6.25	/ —
Domestic	6.25	/ —
Austr. Wool Pouches	7.50	/ —
New Zealand Wool Pouches	7.50	/ —
New Burlap Cuttings	6.50	/ —
Heavy Baling Bagging	5.25	/ 5.75
Paper Mill Bagging	5.50	/ 5.75
No. 1 Roofing Bagging	2.25	/ 2.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints	.07½/	—
Fancy Percales	.08	/ —
New White No. 1	.11	/ .11¾
New Light Flannelettes	.08	/ .08½
Canton Flannels, Bleached	.10	/ .11
Underwear Cutters, Bleached	.11½/	—
Underwear Cutters, Unbleached	.11	/ .12
Silesias No. 1	.08	/ .08½
New Black Silesias	.04½/	—
Red Cotton Cuttings	.05	/ —
Blue Overalls	—	/ .08½
Soft Unbleached	.11	/ .12
Blue Cheviots	.08½/	.09
Fancy	.06	/ —
Washable	.06	/ —
Khaki Cuttings	.06½/	.07¼
Corduroy	.03½/	—
Men's Corduroy	.04½/	—
Ladies' Corduroy	.04	/ —
Khaki Canvas	—	/ .06
B. V. D. Cuttings	.11½/	—

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	5.00	/ 5.50
Miscellaneous	4.50	/ 5.00
White No. 2—		
Miscellaneous	2.65	/ —
Twos and Blues, Repacked	2.75	/ —
Old Blue Overalls	4.00	/ 4.50
Thirds and Blues, Repacked	2.20	/ —
Miscellaneous	1.80	/ —
Black Stockings	3.50	/ 4.00
Roofing Stock—		
No. 1	1.70	/ —
No. 2	1.60	/ —
No. 3	1.50	/ —
No. 4	1.50	/ —
No. 5, Quality A.	1.60	/ —
Quality B.	1.50	/ —
Quality C.	.95	/ —
Old Manila Rope	6.00	/ —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	$150.00/	—
No. 1 Hard White Shavings, runruled	140.00/	—
No. 1 Soft White Shavings	120.00/	—
No. 1 White Ledger	85.00/	—
No. 1 Heavy Books & Magazines	35.00/	—
White Blank News	80.00/	85.00
Mixed Kraft Env. & Bag Cuttings	90.00/	110.00
No. 1 Assorted Old Kraft	35.00/	—
Overissue News	24.00/	—
No. 1 News	21.00/	—
No. 1 Mixed Paper	13.00/	—
Old Corrugated	26.00/	—
Mill Wrappers	17.00/	—

MARKETS

Blanc Fixe

Market unchanged. Demand strong. Prices firm. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Supply adequate. Delivery good. Prices range from $3.75 to $4 per 100 pound drums, l.c.l. works.

Casein

Buying spotty. Prices steady. Low domestic output gives serious concern. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for domestic grades and 28 to 29½ cents for imported grades, f.o.b. shipping point.

Caustic Soda

Demand heavy. Supply worsened by extended strike. Price rise due July 1. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 to $4 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt., at works.

China Clay

Domestic grades and imported in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Supply extremely tight. Production cut back by labor condition. Prices rise July 1. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt., in multi-unit tank cars, f.o.b., works.

Rosin

Easing of export policy will move stocks. Supply good. Domestic buying poor. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, I, K, $7.45. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $4.50 to $5; FF, $5.50 to $6.50.

Rosin Size

Seventy percent gum and pale wood grades. Supply ample. Demand good. Tank cars $5.75 to $6 f.o.b. southern shipping point.

Salt Cake

Demand continues ahead of supply wtih slight improvement in shipments. Production under contract. Domestic salt cake is quoted at $25 to $28.

Soda Ash

Supply tight. Deliveries behind schedule. Prices rise July 1. Current prices, car lots, per 100 pounds; in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

Sodium Bicarbonate

Strong demand with supply good. Reported as $1.85 per cwt. paper bags, carload lots. Price rise July 1.

Starch

Prices unchanged. Demand steady. Supply good. Pearl grade quoted at $7.00 per 100 pounds; powdered starch at $7.12 per 100 pounds; car lots, New York.

Sulphate of Alumina

Prices unchanged. Supply steady. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

Sulphur

Production shows heavy gain. Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc

No change in domestic market. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Titanium Dioxide

Demand continues ahead of supply with no early improvement seen. Prices unchanged. Shipments on allocation. Anastase 17½c pound carload lots, 18-18½c l.c.l., rutile, 19½c pound carload lots, 20-20½ l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.

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FINANCE

Dividends Declared

PORT EDWARDS, Wis.—John E. Alexander, president and general manager of the Nekoosa-Edwards Paper Co., reports that the board of directors voted a 25-cent second quarter and 25-cent special dividend at the monthly meeting on May 29, both payable June 30 to stockholders of record on June 17, 1948.

Mr. Alexander observed that sales and operations thus far this year have been close enough to 1947 levels to indicate another successful year of operation providing the few apparent soft spots in the market do not spread more rapidly than is anticipated at this time.

In 1947 Nekoosa-Edwards paid four quarterly dividends of 25 cents each, plus a third-quarter special of 25 cents and a fourth-quarter special of 50 cents.

NEW YORK—Directors of Rayonier, Inc., producer of purified wood cellulose, on June 8, declared a regular dividen for the third quarter of 25 cents per share on the common stock, payable August 16, to stockholders of record July 30. President Edward Bartsch stated that the company's $20-million long-term debt was reduced on May 31 by payments of principal in the amount of $1,250,000. He added that second-quarter sales and earnings are continuing at about the same level as in the first quarter.

The Southern Advance Bag & Paper Company declared a regular quarterly dividend of 25 cents and an extra of 50 cents on the common stock, both payable June 30 to holders of record June 14.

VANCOUVER, B. C.—Income of Westminster Paper Co. Ltd. for the year ended January 31 totalled $3,952,574 compared with $1,935,093 during the corresponding period last year. Expenses were $3,684,389, leaving net income of $268,184. Dividends totalling $80,000 were paid. Recoverable portion of excess profits taxes amounted to $37,000. Working capital was increased $675,070.

NEW YORK—Directors of Union Bag & Paper Corp. declared a regular quarterly dividend of 50 cents per share and an extra dividend of 25 cents per share on the capital stock of the company, payable June 14, 1948, to stockholders of record at the close of business on June 4, 1948.

ROTHSCHILD, Wisconsin—Net earnings of the Marathon Corporation in the six months ended April 30, 1948, were $2,782,895 compared with $2,484,961 in the same period a year before, D. C. Everset, president, announced here today.

After preferred stock dividend requirements, the earnings were equivalent to $2.04 a share on 1,300,000 shares of common stock outstanding, compared with $1.81 a share in the same six months of 1947.

In the quarter ended April 30, 1948, net earnings were $1,570,054 as compared with $1,354,123 for the same period in 1947.

BELLINGHAM, Wash.—Puget Sound Pulp & Timber Co., on June 9, declared a dividend of $1 a share on the common stock, payable June 30 to stockholders of record June 21, 1948. Including this declaration, dividends totaling $2 a share have been paid or declared payable thus far in 1948.

NEW YORK—For the 16 weeks ended April 24, the Riegel Paper Corp. reports a net income of $368,337, equal to $1.51 per share on net sales of $8,485,439, compared with $387,831, or $1.59 a share on sales of $7,168,171, for the corresponding period of 1947.

MUSKEGON, Mich.—The Central Paper Co. declared a regular quarterly dividend of 15 cents and an extra of 80 cents, both on the common stock and payable June 30 to holders of record June 19.

NEW YORK—International Paper Co. raised the quarterly rate from 75 cents to $1 a share and also declared an additional dividend of 25 cents on the common. Both dividends are payable June 30 to stock of record June 5.

PESTIGO, Wis.—Badger Paper Mills, Inc., declared a regular dividend of $1 on the common stock, payable June 25 to shareholders of record June 12.

FORT WILLIAM, Ont. — The Great Lakes Paper Co., Ltd., declared a regular quarterly dividend of 40 cents on common, payable June 30 to holders of record June 12. Quarterly dividends of 62½ cents on the Class A preferred and 30 cents on the Class B preferred, both payable June 30 to holders June 12, were also declared.

CHICAGO—For the six months ended April 30, the Celotex Corp. and its wholly-owned subsidiary report a net profit of $3,359,455, equal to $3.57 a share on the common stock, compared with $2,912,259, or $3.07 a common share, for the corresponding six months of 1947. Net sales amounted to $26,629,252, against $21,678,895.

Consolidated Paper Co. stockholders will receive a dividend of 25 cents a share Sept. 1, under authority of directors. Holders of record Aug. 21 will be paid.

The Puget Sound Pulp & Timber Co. declared a regular quarterly dividend of $1 on the common stock, payable June 30 to holders of record June 21. A similar amount was disbursed on March 31. A two-for-one split of the present common stock will be effective July 15 to holders July 1.

Brazils Soda Ash Imports from U. S.

WASHINGTON — Currently reported statistics on Brazilian imports in 1947 show the United States supplied 2,514 tons of caustic soda, valued at $85,000, out of a total of 6,252 tons valued at $1,500,000, imported in the second quarter. In the same period, the United States accounted for 945 tons of soda ash imported into Brazil, valued at $112,900, out of a total of 4,523 tons, valued at $286,600 imported.

During this year, Brazilian authorities expect to begin construction of plants for production of caustic soda and soda ash, as the nub of a new industry, for which capital has been provided approximating $5,000,000. Negotiations are reported to be under way for an additional amount of $7,500,000 to be loaned, for purchase of machinery.

This is interpreted as a move by Brazil to become more independent of foreign sources for these commodities, in line with developments reported in other Latin American countries usually importing their requirements of these and other paper materials and finished products.

Argentina, among these, has ordered new machinery which is expected to be delivered this year, for increasing home output.

Connecticut Correcting Stream Pollution

HARTFORD, Conn. — Officials of 19 of Connecticut's 22 paper manufacturing mills met with the State Water Commission at Hotel Bond on June 5 to discuss stream pollution problems. The group will meet again in about a month to discuss recommendations which the commission will compile. These recommendations will tell how manufacturers can lessen water pollution.

Director Richard Martin of the Water Commission, who presided at the meeting, said that nine of the 22 mills now treat water used in their plants so that clean water may be returned to the streams. Six other mills are installing treating apparatus.

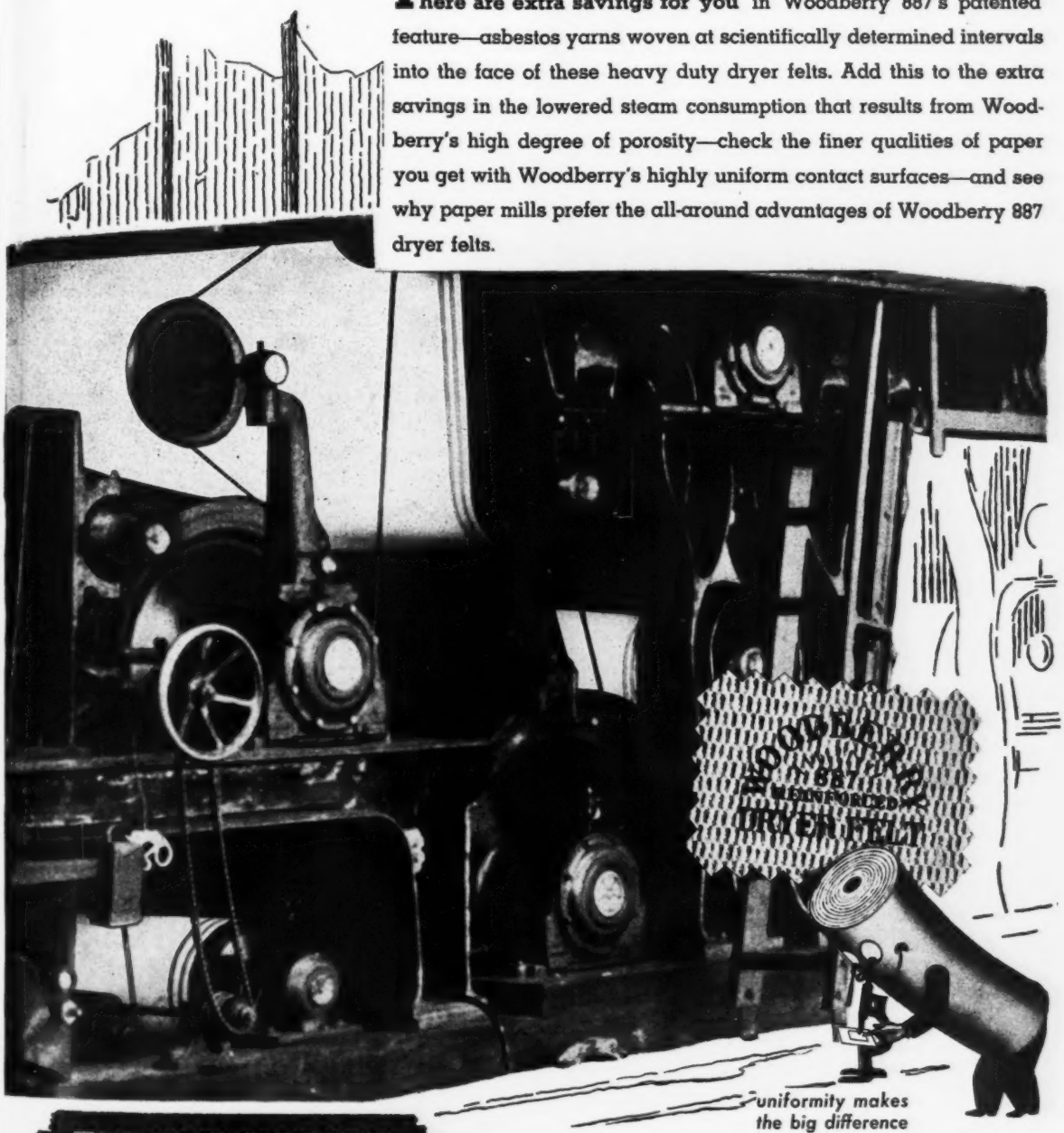
Mr. Martin, and other speakers, said that while waste badly pollutes some streams in the state, the condition has improved greatly in the past ten years.

Ten years ago, the 22 mills discharged 24,275,000 gallons of used water and 37.5 tons of paper fibre and other suspended solids daily into Connecticut streams. Today, they are discharging only 18,325,000 gallons daily into the streams. Of this gallonage, 5,500,000 is clarified by treatment. The discharge of fiber and other suspended solids has been reduced to 17.8 tons daily, it was stated.

Water Commission engineers estimate that if all the 22 mills install waste treatment plants, water discharge into streams would drop to 13,375,000 gallons a day, and discharge of paper fibers and other suspended solids would be reduced to 2.6 tons a day.

Savings are Higher With This Better Dryer Felt

There are extra savings for you in Woodberry 887's patented feature—asbestos yarns woven at scientifically determined intervals into the face of these heavy duty dryer felts. Add this to the extra savings in the lowered steam consumption that results from Woodberry's high degree of porosity—check the finer qualities of paper you get with Woodberry's highly uniform contact surfaces—and see why paper mills prefer the all-around advantages of Woodberry 887 dryer felts.



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Rising Waters Take Toll

(Continued from page 9)

traffic manager, Puget Sound Pulp & Timber Co., Bellingham, Wash.; R. Paradis, Sorg Pulp Co., Ltd., Port Mellon, B. C.; R. M. Buckley, Soundview Pulp Co., Everett, Wash., J. Ashby, Westminster Paper Co., New Westminster, B. C., and Howard Morgan of the Weyerhaeuser Timber Co., Longview, Wash.

Received too late for inclusion in the June 10 issue was a telegram from Howard L. Stilwell, assistant secretary of the Fibreboard Products Co., San Francisco, Calif. Mr. Stilwell wired: "Happy to be able to advise you that our general operating manager, Mr. Robert E. Bundy, states our mills and converting plants are untouched by the floods and are operating every day to full capacity."

Interruptions to rail and truck traffic appear to have inflicted losses on mills equal to, if not in excess of, that done by the waters to the mills and stockpiles.

On the subject of boxcars, the American Newspaper Publishers Ass'n., bulletined its membership on June 10:

"Empty box cars for loading newsprint are tightening in the Pacific Northwest flood area, according to mill advices. Railroads in this area operating under difficulties have concentrated moving cars loaded with newsprint via emergency routes, resulting in the empty box car supply falling off. Immediate correction will be made of this situation by the carriers, operating officials report.

"Publishers are advised to conserve newsprint consumption until the situation in the Northwest becomes normal."

The Bemis Paper Bag Co. multiwall paper bag plant at St. Helens, Ore., which has been closed during the recent floods, will not be reopened because of flood damage to building and equipment. This plant was scheduled to suspend operations as soon as the firm's multiwall plant at Vancouver, Wash., is completed. Instead of reopening the St. Helens plant, Bemis will expedite completion of the Vancouver plant, which is expected to be ready for operation in July.

Pending opening of the Vancouver plant, Bemis will maintain deliveries of multiwall paper bags in the Northwest by shipments from its plants at San Francisco and Wilmington, Calif., and Peoria, Ill.

Hutchinson Succeeds Fuller As Harrington & King Prexy

CHICAGO — Foye P. Hutchinson was elected president of the Harrington & King Perforating Co., succeeding J. M. Fuller, who retired on June 1 after 62 years of service with the company. Judson E. Fuller was elected vice-president-treasurer, and S. Harrington, Jr., secretary. Incorporated in 1883, the firm has devoted its efforts through the years to the industrial and ornamental perforating of metals and other materials.

AFL Paper Makers Union Wins Two Elections

UTICA, N. Y.—The AFL Paper Makers Union recently won union shop elections in Utica and Clayville paper mills. At the plant of Sitroux Inc., the union was successful 224 to 8, while the same union won at the Superfine Paper Mills Inc., Clayville, 82 to 3.

NRLB Orders June 18 Election

SHAWANO, Wis.—The Minneapolis regional office of the NRLB has ordered a bargaining election June 18 at the Jolin Corp., here to determine whether Local 572 of the International Brotherhood of Pulp, Sulphite & Paper-mill Workers (AFL) shall represent the workers.

SAPI Admits Brown To Membership

NEW YORK—Walter J. Brown of the St. Regis Paper Co. has been admitted to membership in the Salesmen's Ass'n. of the Paper Industry, E. G. Amos, secretary-treasurer of that group, reports.

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Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
May 1	103.5	May 3	107.5
May 8	102.4	May 10	107.9
May 15	100.4	May 17	105.3
May 22	100.3	May 24	105.1
May 29	98.9	May 31	105.6
June 5	*95.2*	June 7	106.7

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5		
Feb.	105.9	June	106.0	Nov.	109.3	Jan.	100.9
Mar.	106.1	July	93.5	Dec.	101.5	Feb.	100.3
Apr.	105.1	Aug.	104.2			Mar.	100.6
		Sept.	102.0	Year Avg.	104.3	Apr.	102.5
						May	*100.4*

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	92.8	100.3	88.9	88.4	88.8	100.0	105.3	*100.5*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: *As of January 10 capacity base increased by 13.3%.*

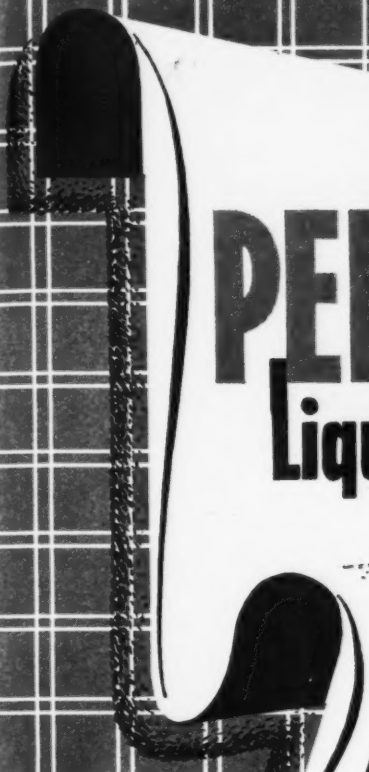
PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
May 1	102	May 3	102
May 8	101	May 10	101
May 15	100	May 17	102
May 22	100	May 24	101
May 29	100	May 31	98
June 5	87	June 7	98

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	*100*								

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



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PENN SALT
CHEMICALS

The Paper Outlook

Report released June 9 by the Paper Committee of the National Association of Purchasing Agents, under the supervision of Chairman T. A. Corcoran, Courier-Journal and Louisville Times Co., Louisville, Ky.

Those who attended the Paper Forum at the Convention came away with the feeling that the paper situation, generally, had improved since a year ago. Still very tight, of course, are kraft wrapping paper and newsprint, and even those two grades surely are nearer a balance than 12 months earlier.

Fine papers are reported as already in balance, and there is healthy competition in many grades, particularly the rag papers. The sulphite papers are not as easy as the better grades, but supplies seem to be ample.

The production ratio for April was 102.5 for all U. S. mills, and the average for the year, to date, 100.9. Since this ratio is less than the 101.1% at which the mills were operating last year, it would seem that the pressure on them is somewhat reduced.

Wood Pulp

By H. L. WEBER
Fibreboard Products, Inc.
San Francisco, Calif.

The pulp picture is not as complicated this year as it was last, at this time. There are, however, some knotty, little problems in it; supply, consumption and inventories, and price.

From the supply side, total pulp is on the increase. Nineteen hundred and forty-seven tonnage was up 13% from 1946, while the first quarter of 1948 is up 6% from the first quarter of 1947, and slightly higher than the fourth quarter of last year. New supply of total pulp looks, now, to be on the plus side of demand.

It appears that domestic productive capacity will be aboue one million tons, or 9% greater in 1948 than in 1947. The wood supply is good and appears adequate to take care of this increased production.

Imports were 29% higher in 1947 than in 1946, and 27% higher for the first quarter of 1948 than the first quarter of 1947. Canadian imports should continue to improve, as their increase in production is greater than their increase in pulp requirements; furthermore, we are, of course, Canada's logical market.

With European imports, however, the picture is not so good. The Scandinavian mills are not running at capacity. Norway's operations are a little over 50% of capacity; Sweden's a little over 80%, with Finland's in between. Furthermore, their pulp inventories are considerably lower now than a year ago. Their wood supply is reported to be not completely satisfactory. The cut was retarded by a bid Winter, and there are indications that their wood resources for a number of years will, apparently, not sustain full operation. This brings up a question as to why their shipments to us have been higher, so far this year, than during 1947 for the same period. Could these countries be dollar-hungry, or are they looking to future markets. Or are the troubles on shipments to European countries, such as export licenses and other restrictions, the answer? Apparently, we will get as much pulp this year as last from the Scandinavian countries and, possibly, more.

Now, let us look at the consumption and inventory figures. Consumption is on the increase. In 1947, we consumed 10% more pulp than in 1946, and we consumed 7% more in the first quarter of 1948 than we did in the same period of 1947. Taking market pulp only, we find that the increase for the first quarter this year was up 9% over the first quarter of last. Orders for goods in the pulp-consuming industry are reported up slightly, with unfilled orders in the same industry reported unchanged. From this, it is apparent that there should be a sustained demand and usage.

Inventories of pulp in this country are higher than a year ago; however, there are certain maladjustments, so that the inventories, while larger, are not necessarily well-rounded or in balance. This condition, in all probability, will be corrected by the end of the year.

The price picture has not yet crystallized, but general thinking is that domestic and Canadian prices will not change from those quoted during the second quarter, and we understand that the Swedes are already quoting second-quarter prices for third-quarter shipments. Hence, the price movement on pulp appears, temporarily at least, to be horizontal.

United States buyers are definitely resisting high Scandinavian prices to the extent that some second-quarter pulp on open contracts was canceled. Apparently, however, this canceled tonnage was sold by the producers in the European market without too much difficulty, and at even higher prices than those rejected here. The $64 question is, how long will these European countries, who are supposed to be short of dollars, continue to or be able to pay $10 or $20 a ton more for pulp than we are willing to pay, here in the United States?

So far, the reported efforts of the United States to get the Swedish Government to cancel the $15 per ton export tax has proved unsuccessful.

Next, last and, by no means, least, what will the Rearmament Program, or a war scare, do to the pulp market? Most people seem to think that either one or both would stimulate demand, possibly recreate shortages, with the resultant firming up of prices.

To sum up, it looks as though supply will increase, but so will demand. Inventories should balance out, with prices probably remaining firm through the third quarter, except on the high ends, which everyone expects to come down. Supply and demand are in a rather fine balance, which could be upset by aggressive war talk or a large-scale armament program. In spite of all this, it looks a lot better, from an over-all supply standpoint, than it did a year ago.

Book Paper

By RALPH N. BETTS
America-Education Press, Inc.
Columbus, Ohio

Book mills continue to operate at near capacity levels. Some of the increased mill capacities which were promised for January 1 are just now coming into production. This will, of course, ease the over-all tight situation in book papers. Our attention was called to one such mill, however, where the increased capacity was, to a certain extent, a myth, because while more paper could be produced, the production was starting to bottle-neck in the finishing room, because corresponding allowances were not made to conform with the increased machine output.

Deliveries are, on the whole, much better than they were six months ago. Prices continue to remain high, and there is no indication that competition and supply will cause any decrease. Those of us who have studied our Lewis and Heinritz, on purchasing, will recall that price should be a secondary matter. This is certainly true at the present time, not because of the good judgment of the buyer, but because the situation is forced upon us.

Fine Papers

By E. E. McCULLEY
Courier-Journal Job Printing Co.
Louisville, Ky.

The supply-demand ratio in fine papers is somewhat more than in balance. Rag grades are in extremely easy supply and healthy competition is again coming into the picture.

In the coming year, it is expected that the present efforts of the mills to reduce the cost of cotton cuttings will receive the co-operation of mill supply brokers and packers. The producers of rag grades are quite aware that the spread between 25% rag and sulphite is punishing them, and something will be done about it.

In the sulphite field, the situation is not as easy as on the rag grades, but

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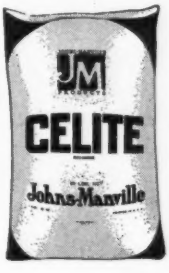

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supplies are ample. The nonintegrated mills, who expect to hold or regain their prewar position in the industry, have taken the lessons learned in the last few years very seriously.

Real competition in the sulphite field can be expected in the coming year. Those mills whose future is committed to the sulphite grades have spent a great deal of thought, time and money to do things to production costs, and some of them are ready to put the chips on the table now. Those that are not, are pushing vigorously to be ready when the time comes. As the margin between 25% rag and sulphite is lowered, the pressure on the sulphite producers will increase, and the sulphite mills are getting ready to meet these pressures.

In the coming year, it now appears that users of fine paper can expect better quality. That means better quality of paper, better packing, better inspection and better trim. It means adequate mill and merchant stocks to service the volume of business they hope to do and, consequently, better deliveries. It means that users will not have to assume merchant and mill inventory functions, with resultant lost turnover, in order to protect their own sales volume. It means that the mills and merchants will again assume more of their proper financial burden in the distribution of their product.

In short, it means we are going to have some very healthy competition, and that is good.

Kraft Paper

By JOHN W. AMOS
Montgomery Ward
Chicago, Ill.

A moderate slackening in demand has eased the supply of kraft paper. This has resulted in an emphasis upon quality rather than a lowering of prices. "Bogus" kraft wrappings have, generally, been cleared from dealers' inventories, with not much probability that they wil become prominent again on the market.

Once more buyers are refusing below-standard shipments. Rejects are frequently offered at a wide variation in price, with little relation to the regular market, ranging from 7½ to 11c per pound out of New York.

The easing in container demand has not had much effect on kraft wrappings because of the new entries into the container field. Further, the increased demand in bags has not been satisfied. Grocery and multiwall bags are short. Merchandise bags, on the other hand, are reasonably plentful, because of the higher prices.

An estimated 20 thousand-ton production weekly is now being converted into bags of all kinds, while less than 5 thousand tons are produced weekly in kraft wrapping. Along this line, the usage in multiwall paper bags is expected to increase to 108 million bags in 1948, as compared with 51 million produced in 1947.

Semi-Southern mills are quoting 11.75 cwt. base price, with a half-cent increase for each step down, in basis weight, below 40. The prospects are good for a continuation of the present price level for some time to come, as long as marginal Northern mills find a ready market for all the kraft wrapping they can produce at 15c per pound in carload lots. Unbleached sulphite pulp is quoted at $150 per ton.

Newsprint

By T. A. CORCORAN

There seems to be no ceiling to the demand for newsprint. A 1939 U. S. consumption of 3,520,372 tons had grown to 4,752,904 tons in 1947—an increase of 35%. And, if the rate for the first four months continues, 5,000,000 tons will be used in 1948.

Manufacturers have struggled to keep up with this rapidly increasing demand and have been barely able to do so. The total supply available to U. S. users in 1939 was 3,533,916 tons. It had been increased by 1947 to 4,850,256 tons, and will surely exceed 5,000,000 tons this year.

While there is no new mill construction under way in Canada, producers continue efforts to get greater production out of present equipment. This is pretty much the situation in the Eastern States, too. The largest newsprint manufacturer in the U. S. is making alterations now that will increase output from 5% to 7%. The greatest increase in production will probably be in the South in the future. Many recent increases may mean the slight difference needed to bring supply and demand into balance. Some experts estimate this to be as little as 5%.

The latest figures are for April and show U. S. *consumption* at 447,807 tons, slightly outdistancing the available *supply* of 444,929 tons.

Stocks on this continent, however, seem to hold up quite well. On April 30, total North American stocks stood at 651,790 tons, an increase of approximately 7,000 from a month earlier, and 2,000 tons above a year ago. In days' supply, according to figures compiled by A.N.P.A. for 525 daily newspapers, 31 days' was on hand at the end of April, compared to 29 days' on the same date a year earlier.

Boxboard

By STUART EDGERTON
United States Rubber Co.
New York City

It seems safe to state that production today is as high as at any time since the end of the war. According to government figures, production has been running between 24,000 and 30,000 short tons, with the recent figures at the higher level.

With collections of wastepaper running slightly higher for the first 18 weeks of 1948 than for the same weeks of 1947, and with increased quantities of pulp available, there would seem to be no question but that the paperboard industry is in a position to manufacture the greatest production of paperboard, when and as required, in its history.

Of course, these two main ingredients of paperboard cannot be purchased without the "salts and peppers" and other ingredients that are necessary—and, certainly, a goodly supply of coal is required. But these all seem to be available, even in spite of John L. Lewis and other obstructionists.

The demand for paperboard continues at a high level. There is a considerable difference of opinion as to what the European Recovery Plan means in terms of paperboard. Some believe that the "ERP" is going to affect the paperboard market to a very large extent, but many others disagree.

While manufacturers of paperboard do not yet seem to be in a position to go out and offer carlots of paperboard to any and all consumers, inquiries seem to substantiate the feeling that, if you need paperboard and have had a good source of supply, your suppliers are well able to take care of your needs.

In other words, the supply and demand picture seems to shape up as follows: there is plenty of paperboard and there is a healthy demand for it.

The quality of paperboard in its various grades is being improved by the manufacturers as fast as possible. There have been many disappointing delays in this improvement program, and industry has had to pay quite a penalty for the better grades of board, when the better quality boards were demanded by the production and sales departments, and the purchasing man had to obtain that quality.

West Coast Conditions

By HORACE DUCKENFIELD
Metropolitan Life Insurance Co.
San Francisco, Calif.

In most categories, there is a very good supply of paper, and some of the wholesalers, at least in Northern California, seem to be experiencing some embarrassment by reason of mounting inventories.

Coated books and labels may be considered exceptions to the condition, however, for we are still on the "short side" in these two important commodities—important because their use is vital in the great demand, at this season, for labels for the fruit and vegetable canning pack. Bonds and writings are in very good supply, both in rags, in varying qualities, and in sulphite.

Stocks of cover papers have reached a stage where almost any choice is becoming available.

All printing papers, with exceptions mentioned, are available from stock or, in a very reasonable time, from the mills. On kraft wrapping and bags, the supply might be quoted as adequate for the current demand, though unusually

large orders must be planned for and brought from the mills as they may be obtained.

Tissues are none too plentiful, yet.

Canadian Conditions

By J. F. STEPHENSON,
Kraft Containers, Ltd.
Hamilton, Canada

Canadian paper conditions, in general, are very much improved. Quality is still a long way from prewar standards, but is getting better every day. It is still very much an opinion only to try to forecast what the next six months will bring. Freight rates have increased 21%; labor from 10% to 15%, and with raw materials such as coal, chemicals, etc., used in production, still advancing. In some mills, the average working days in the woods were less than 30 man days per year. With such turnover from the tree to the mill, the cost has almost doubled.

In order to keep going, mills have raised prices on some materials and, those that haven't gone up as yet will do so in the next few months. There is no guarantee that this will be the final price raise, but caution must be exercised if demand is to keep up. The danger in this industry, like in many others, is that you may price yourself off the market. A customer using patent coated board for his folding cartons will change to something cheaper. Multiply this by the millions of uses and kinds of paper, and you will readily agree that pricing yourselves out of business is a possibility.

In the war days, paper customers ordered months in advance, and did their best to keep as much inventory as possible. Today, mills can give better delivery on new orders, with the result that stocks are being watched very carefully in case a break occurs and prices go down. This does not seem very certain, at the moment, but all mills are geared to a much greater production than in 1939 and, should some mills find they have not sufficient business to run full production, they are not going to remain idle if, by a small reduction on a few large accounts, their volume can be maintained. The other alternative is to give better quality without price increases.

In newsprint, kraft and fine papers, the situation is very similar to the general outline. While the world output is lower, Canada has increased her production of newsprint and is continuing to do so. Her exports are still about the same to foreign countries, but, to her neighbor at the south, she gives the increase. Prices seem to be fairly stable, but may advance due to the increasing demand. Kraft supplies are good, with odd exceptions, such as M. G. kraft, etc., which is still a little behind. Further price increases may still be put through to offset rising costs. Fine papers with rag content are still a bit difficult, with coated stock easier but still remaining on a quota, and the stability of prices very much in doubt.

It is advisable to keep inventory as high as storage capacity, regardless of the price break possibilities. Should world conditions change overnight, the paper situation could go back to wartime conditions within a matter of weeks, and we would again be in difficulties. All purchasing agents should carefully watch their individual requirements, to take advantage of any change that may occur.

Diamond In New Setting

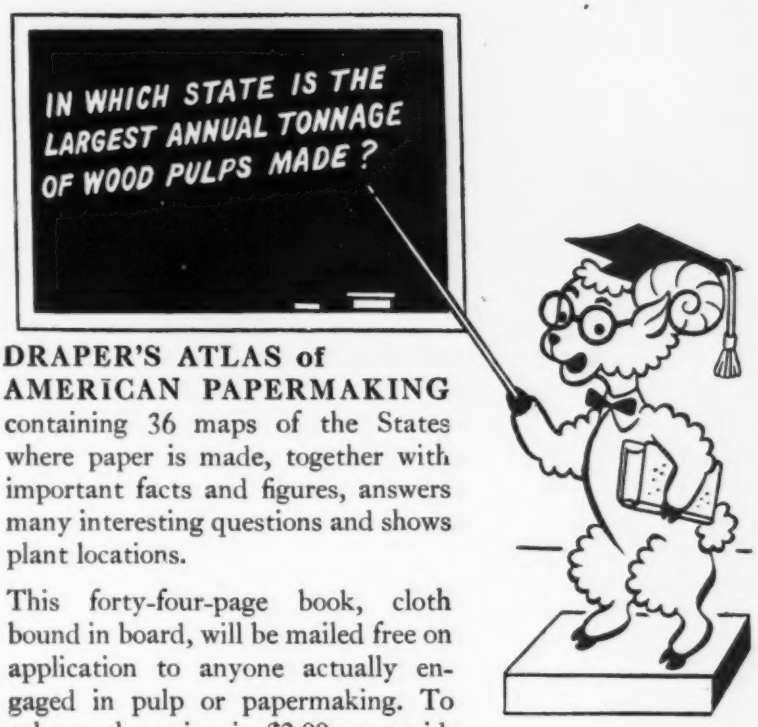
DANVILLE, Va.—Diamond Paper Co., is now in new quarters at 804 Lynn street.

Farver and Clowes To Coosa River Co.

BIRMINGHAM, Ala.—Appointment of Franklin D. Farver, of Appleton, Wis., as comptroller of the Coosa River Newsprint Co., Childersburg, Ala., was announced on June 9 by A. G. Wakeman, vice-president and general manager of the concern. Mr. Farver has been chief accountant of the Kimberly-Clark Corp., Neenah, Wis.

Simultaneously, announcement was made of the transfer to the Coosa River Co. of Rupert I. Clowes, as cost accountant, from the position of mill office superintendent at the LongLac Pulp & Paper Co., at Terrace Bay, Ontario.

What do you know about Paper?



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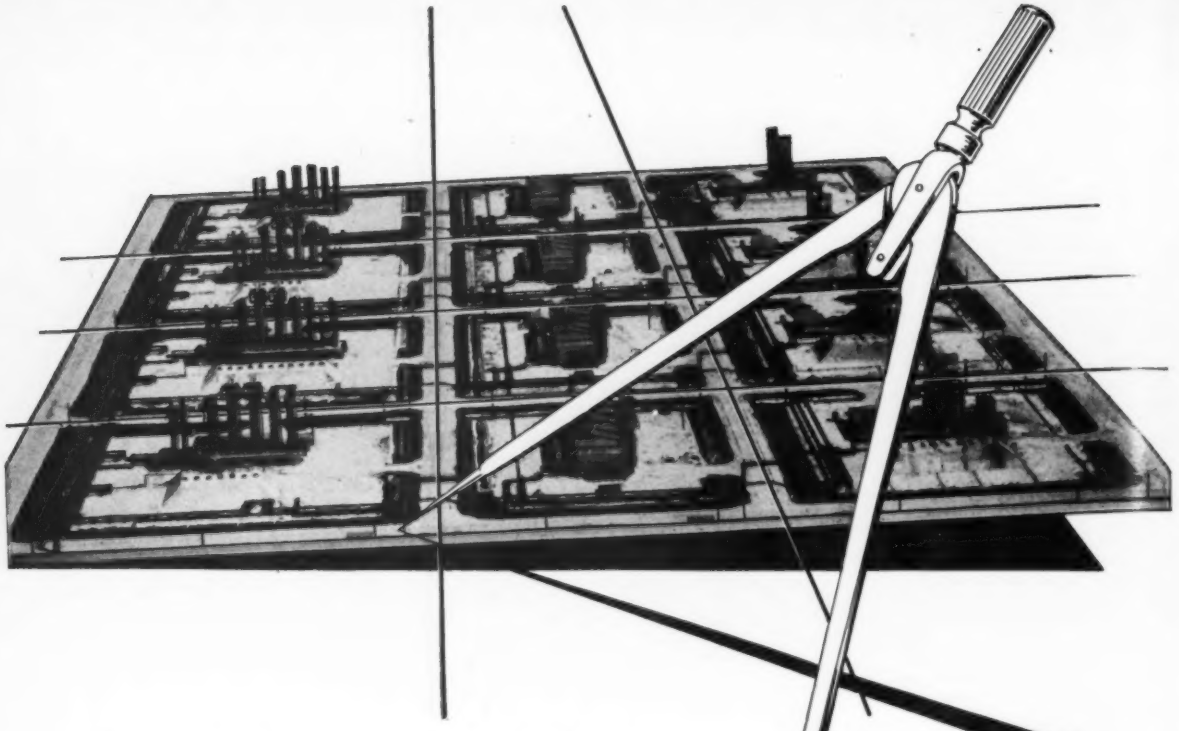
Answer to Question No. 6 The State of Washington



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Some New Thoughts Regarding the Cylinder Machine

By Jacob V. Edge
Downingtown Mfg. Co., Downingtown, Pa.

I feel very well qualified to speak on the modern board machine, not because I am an authority, but because recently our company has built a number of the most modern cylinder machines in the country.

In board machines the emphasis is not on width of machines, as with the fourdrinier, nor do mills generally expect to get much over 500 FPM. So they may be classified as the less critical type of machine mechanically. They are, however, none the less complicated and involved.

As far as formation goes just as much care must be used in each of the vats as in the single fourdrinier head box. Operators are hampered in this since it is difficult to see a single ply so that you can often only guess at what's the matter.

The thicker a sheet of wet paper is the harder it is to dry, either by pressing or by heated dryers, necessitating even greater care in construction and arrangement of presses and greater care in selecting the correct dryer arrangement.

Although the fundamental principles in cylinder machines have changed little there have been a great many refinements made, that are note worthy.

I think it is much easier to talk about a picture and much easier to understand a speaker with a picture in front of you, so here are a few photographs of our most modern board machines.

(Fig. 1—Vats and Suction Drum Roll and Nofome Mixboxes)—Here you see the section of uniflow vats on a seven-cylinder board machine used to make a lined chip board. All seven of these vats are uniflow and all are made of stainless steel. In the background you will notice part of the approach flow system. These are the mixboxes and are also of stainless steel. The stock from the screens is fed up through the bottom while recirculated white water is also forced up through the bottom. Here in the bottom of these mixboxes is where the final dilution occurs, and the final and complete mixing of stock and white water without stratification. The stock then flows over a wire which allows entrained air in the form of bubbles to escape. From here the stock passes to the approach flow inlet.

Before we leave Fig. 1, please note the sectional electric drive for the suction drum roll. Also, here on the front, you see the suction connection for the drum roll. Note that the vacuum is applied through the frames on the front side of the machine which is a great improvement over pipe, thus eliminating the awkward suction connections used on earlier rolls.

(Fig. 2—Duplex Hoppers)—From the screens the stock is fed through pipes of proper design to the bottom of these long stainless steel approach flow hopers. In these hoppers is where good formation is born, as is

Presented at the New Orleans Convention of the American Pulp and Paper Mill Superintendents Association, May 20, 1948.

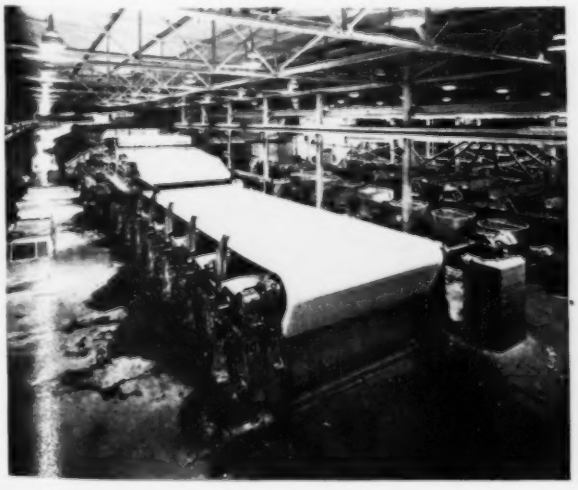


Figure 1—Vats and suction drum roll and Nofome mixboxes.

Figure 2—Duplex hoppers.

Figure 3—Front side of vat section.

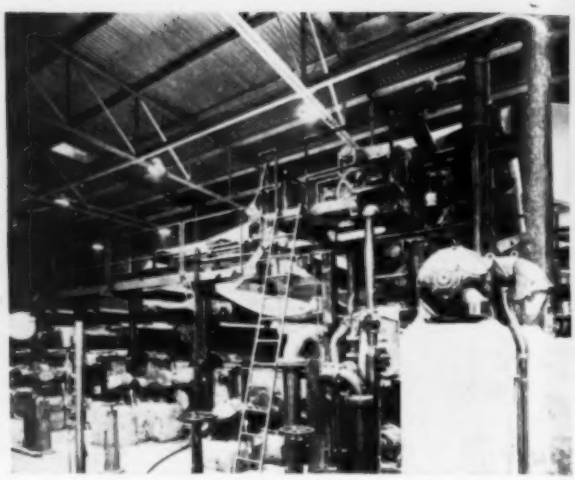


Figure 4—Showing top felt wash box.

necessary to produce a level and well-formed sheet of board. The purpose of the hoppers is, of course, to spread the stock from the single round pipe to an even flat ribbon of stock the full width of the cylinder mold. To do this properly the cross-section area of the stock pipe should be maintained through this vat entrance equipment, so that the velocity of the stock will not be materially changed during this spreading action. The approach flow system must be free of turns, baffles or projections which would tend to change the rate of flow even momentarily. The same idea of uniform rate of flow is carried through the vat partitions to the mold itself.

You can also see in Fig. 2, small portions of the overflow system. It has been found that as much as one-third of the stock entering a uniflow vat is overflowed and returned to the mixboxes. Here you see a portion of this overflow hopper and the pipe and recirculating pump. The reasons for overflowing stock are varied, but I think it can be summed up in these two reasons: (1) to keep dead pockets from occurring and, (2) to make the speed of the stock as it goes around the vat circle approach the speed of the cylinder mold face, tending to give a uniform fiber formation.

The next figure shows a closer picture of the vats themselves.

(Fig. 3—Front Side of Vat Section)—Here you see all seven vats and a good picture of the suction drum roll. Notice the clean, neat stainless steel vats. Also notice how the cylinder mold, top roll, slice, etc., are carried on cast iron stands independent of the vat itself.

The use of stainless steel has sometimes been termed a "luxury item" on a paper machine. Perhaps during these unsettled times you might call it so but I feel confident that in a very few years mills having stainless steel vats will feel they are more than a luxury, for easy-to-clean equipment and clean paper is becoming more important every day. To have a vat that is easily cleaned with a common hose makes real cleanliness an easy job. Also, the bacteria count of paper will be watched much more closely, especially in mills making bottle caps, butter cartons, etc., even cereal box board may have to come under a certain bacteria count specification. The stainless steel vat is one way to help control this condition.

There has always been controversy on which type of preliminary water removal equipment should be used. This customer chooses the suction drum roll. This is a 30" drum roll with a 25" wide suction box and carries around 15" of vacuum. Another choice would be the suction drum press which is similar to this installation except it has a rubber covered top roll and a top felt. This arrangement adds pressing to the action of the vacuum, thus increasing the water removal. Both of these pieces of equipment must be driven and both require large vacuum pumps and motors to hold high vacuum over so large a suction area. The third piece of preliminary water removal equipment is the combination of the plain and the suction extractor. In this case the felt with the sheet underneath is passed over a wire-covered roll similar to a very heavy cylinder mold. A top roll presses the sheet directly against the wire face and forces the water through the wire. This plain extractor is followed by a suction extractor which uses the same principle, but adds the advantage of vacuum to help in the water removal. This suction extractor has a 3¾" wide suction box and should carry vacuums up to 15", but because of the reduced suction box width a smaller pump and drive can be utilized, thus reducing the the operating expense. No drives are required on either the plain

Figure 5—Showing press section.

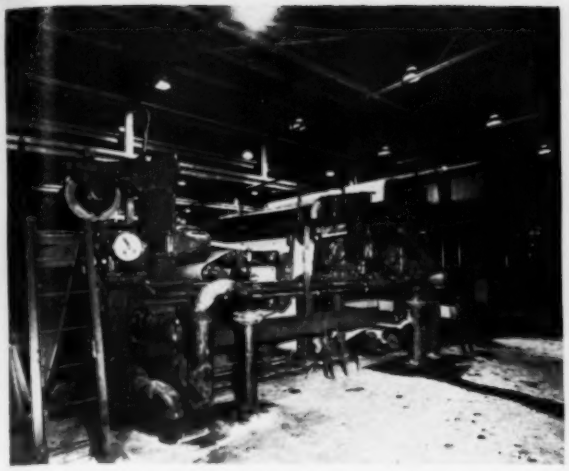


Figure 6—A second picture of the press section.

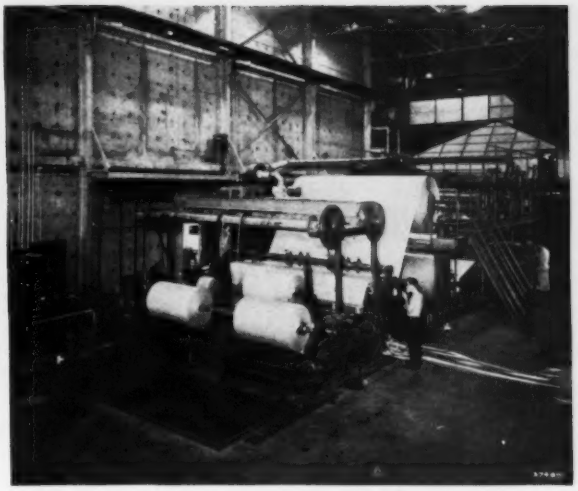


Figure 7—Showing dryer sections.

extractor or the suction extractor, thus further decreasing operating expense. In the case of this particular mill the suction drum roll was selected in order to use a short top felt and to reduce felt marks on the lined surface. If it was not for this fact a suction drum press or a plain extractor—suction extractor combination might have been used.

(Fig. 4—Showing Top Felt Wash Box)—This is a picture of the press end of the vats and the top felt wash box. It also shows the drive for the first primary press, and the electric helper drives on each vat.

In the top felt wash box is a whipper, adjusting roll, showers, etc., to clean the short top felt. I am sorry the picture doesn't show more clearly the suction felt roll which does the final cleaning job on the felt before it comes in contact with the sheet. You can see the piping for this roll. This large section of pipe is the separator. The rear suction connection is made in the oposite side of this separator. The front connection for this same roll is shown going across the machine. The vertical pipe is the water leg and the air is exhausted on the other end of this inverted "U." This keeps the water from going through the vacuum pump and insures a constant vacuum and more efficient pumping.

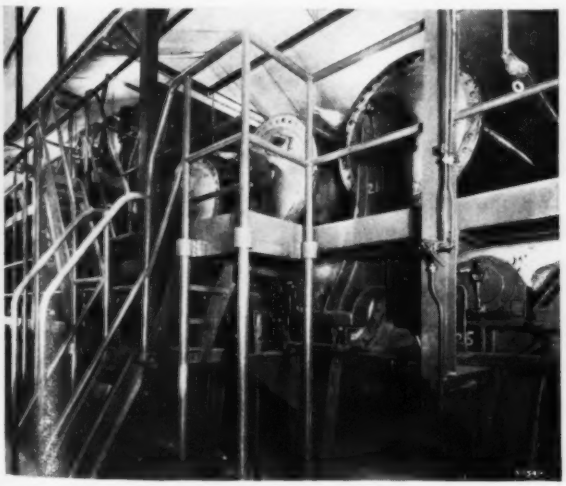


Figure 8—Showing dry end.

(Fig. 5—Showing Press Section)—Here is the press section of this same machine; the vats are to the left. As stated before, the heavier sheets of paper, such as board, require special pressing techniques. The modern technique is to alternate the plain and suction presses. This has been found by experience to be the most successful arrangement. This machine has first, a plain primary then a suction primary, then a plain primary, a suction primary, a plaint first press and a suction second press. By arranging the presses in this manner, the first plain primary brings the top felt into contact with the sheet and squeezes out a small amount of water. Then the first suction primary presses water from the sheet through the felt which is directly removed by the vacuum. However, larger amounts of water are removed from the felt than the sheet, so that the felt is really dryer than the sheet. The second plain primary equalizes the water in the sheet and felt again. It may also remove a small amount of water, as the sheet by this time is dry enough to allow weighting of this press. The second suction primary then again removes more water from the felt than from the sheet. The plain first press again equalizes the moisture and since the felt is returned from this press no further suction is applied to it. The second press affords the final chance to remove water before the expensive job of drying begins, so all possible advantages should be used here; thus the suction roll.

Please notice the pneumatic loading cylinders, the motor operated broke conveyor and the suction felt roll with its water leg arrangement. This is the suction second press; notice the suction connection directly on the hollow press frame.

(Fig 6—A Second Picture of the Press Section)—Here is another view of the press section. Here you can see the first plain primary, the second suction primary, the third plain primary, the fourth suction primary and the housing of the plain first press.

(Fig. 7—Shows Dryer Sections)—This slide shows part of the two-deck dryer section and part of the three-deck section. It is customary to have the first few dryers two-decked and the remainder stacked, or in three deck sections. This machine has 30 two-deck dryers and 60 three-deck dryers.

These dryers are all mounted on anti-friction bearings and are supplied with a circulating oil system. Notice

(Continued on page 61)

Some Modern Concepts of Stock Preparation

By Tony Agronin

In Charge of Engineering, Shartle Brothers Machine Co.

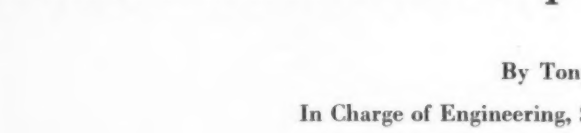


Figure 1

By "Modern Concepts of Stock Preparation," we do not necessarily mean we are going to present to you an entirely new approach to stock preparation, but rather to show you that there are modern machines which today can produce the type of stock that you require with the maximum of control and the minimum of power.

It has always been the attempt of paper makers to produce the strongest and best sheet of paper within the range of both their ability and the equipment available. It is known that the longer the fiber, the more inherent strength can be developed from it by having pulping equipment, agitating equipment and paper machines which would satisfactorily handle long fibers. Due to developments in modern pumps—that is, the modern centrifugal pump—modern propeller agitators and agiflo pumps, longer wires and better water removal equipment on a paper machine, the paper makers are now able to handle a much longer fiber than it was possible to do before.

It is, therefore, within the province of stock preparation equipment manufacturers to develop stock refining equipment which will get the maximum strength development out of the fiber itself.

There are two machines which have been developed for increasing the strength and the usability of paper fibers. The first of these is the Hydrafiner, (Fig. 1) which is designed for strength development characteristics without materially shortening the fiber.

The second is the Jordan (Fig. 2) which when correctly applied, is designed to increase physical tests by shortening the fiber.

From curve D-4451 (Fig. 3), you will note that each machine develops certain strengths, depending upon the specific treatment to the fiber.

In the Hydrafiner action the tear increases, and you get some increase in tensile and Mullen. All of these tests are increased with practically no freeness drop and slight increase in shrinkage.

Under Jordans you will note that the tear drops off immediately, whereas the tensile and Mullen increase much more rapidly. However, you will note that the freeness drops off quite rapidly and the shrinkage value increases.

On the third part of the curve, you will note that further jordaning merely accentuates this standard Jordan treatment.

Thus, there is a basis for predicting the type of work available from either the Hydrafiner or the Jordan. From that we can, therefore, recommend to you, the type of machine that you should use, depending entirely upon the final physical tests required. Roughly, we can break down the two categories to—1) A machine which does not cut fiber, which we will, in this case, refer to as a Hydrafiner, 2) A machine which cuts fiber, in which case we refer to it as a Jordan.

Wherein is the inherent difference in the two machines?

Tests and operating experience have indicated to us that there are three factors which tend to develop stock strength without cutting the fibers. These factors are as follows: 1) Relative effect of horsepower vs speed. 2) Stock Consistency. (3) Inlet Pressure.

In order to develop strengths indicated in the first part of curve D-44751 (Fig. 3), we have found it desirable to operate a Hydrafiner at a relative high speed vs horsepower. Experience has indicated that speed, in itself, is not the factor, but it is the relative speed vs horsepower which is actually in terms of bar-to-bar clearance, which determines the type of work done.

The second effect is consistency. We have found, for this particular type of treatment, that the maximum consistency possible for a particular installation, makes for most efficient operation. The consistency, of course, varies, depending upon the type of stock and the equipment used to handle it. We have more or less set six per cent as an optimum figure; however, in certain cases, we have gone higher than that, and in other cases, slightly lower.

The third effect is pressure; the amount of pressure is debatable. However, we do know that we require sufficient pressure to insure that the machine is full of stock at all times. We have also found that a slight amount of additional pressure makes for more efficient operation. In other words, we have more or less set up inlet pressures of around 10 lbs. per square inch. There is no hydrating machine on the market today which is an efficient pump; therefore, in every efficient refining set up,

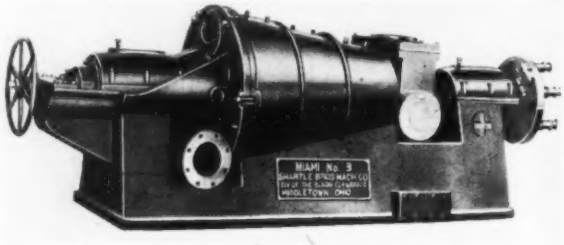


Figure 2

we want a higher inlet pressure than exit pressure in order to insure that the machine itself does no pumping.

These factors, as listed above insure that we get the maximum strength development in any fiber without cutting the fiber itself. By that I do not mean that we can eliminate all possible cutting; however, we have found that with correct operation of the Hydrafiner, or in similar type hydrating machines, we do get the minimum of cutting and the maximum of strength development per horsepower per ton, as listed above.

On the other hand, if we consider further tests, such as indicated on the second part of the curve, we find that these tests are developed faster by cutting the fibers. Therefore, the Jordan as furnished by Shartle is especially designed to cut fibers. The three factors which promote cutting the fiber are as follows:

(1) Relatively high horsepower vs speed. There again speed, in itself, means nothing, as it is the higher horsepower at low speeds which determine whether or not the machine cuts.

(2) Consistency—in order to get efficient cutting, the stock should be at a low enough consistency so that the fibers can move freely and set cross-ways to the bar. The optimum consistency of around three to three and one-half percent, seems to give the best and most efficient work. By this we mean any consistency lower than that cuts down the amount of work per horsepower input and on consistencies higher than that we lose some of the cutting effect. This, of course, again varies slightly on the types of stock, but in general these are the operating consistencies which we have found work out best.

(3) As we have indicated, high inlet pressures increase the refining effect. Therefore, in a Jordan, we do not recommend any inlet pressure beyond that required to keep the Jordan full. This is normally obtained with a head box set above the inlet of a Jordan, because any pressure in addition to that cuts down the amount of cutting effect.

Regarding the effect of horsepower vs speed, to which we refer above, we might give you an example which we have used before, but I believe it clearly demonstrates this particular point. We build a No. 4 Jordan which is widely used in the cigarette industry and which operates at a speed of 450 RPM, requiring approximately 75 HP. We also use the same size plug, that is in regard to diameter and length, in the No. 4 Hydrafiner. Figuring the through put in tons per day as approximately the same, we operate on certain applications, this machine at a speed of 900 RPM. The increase in horsepower varies theoretically as the cube of the speed, but practically as about the 2.6 power. We find that the actual horsepower required to get the same bar-to-bar setting for cutting action, at the higher speed, would be approximately 308 H.P. If we happen to operate this machine at 150 H.P. with a 900 RPM motor, you will note the bars cannot be in contact, and we, therefore, get a more or less fibrillating action rather than a cutting action which is the type of work which gives increased tear strength as indicated on the curve.

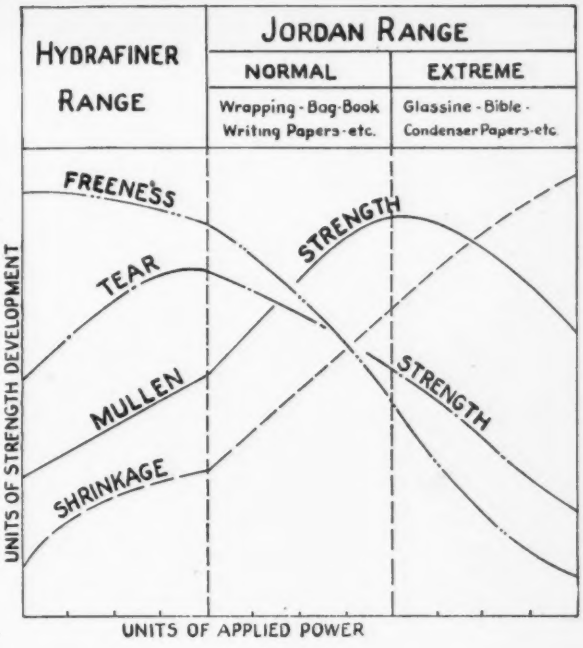


Figure 3

The question of relative clearance between bars is rather difficult to compute, and even check. If we had a perfect machine and a completely defibered stock, correct treatment of fiber would probably require bar-to-bar clearance in terms of fiber diameters. However, as we usually start out with fiber bundles, the clearance is in terms of a number of fiber bundles; in other words, the first part of the treatment of a fiber is in terms of 'defibering' rather than strength development.

This factor is one reason why we believe that batch operation in specialty mills works out more satisfactorily because the usual practice is to keep pushing in the plug as the rening process proceeds.

On drawing L-323 (Fig. 4) is indicated our interpretation of the actual action of a refining machine and a Jordan machine on fibers.

For refiner action, we use deeper channels and recirculate the stock through the machine. The relative effect of horsepower versus speed indicates that we get a definite clearance between bars.

Deeper channels allow the heavier stock to go through and the greater concentration of fibers, gives some rubbing action of fiber on fiber. Thus, refining is a combination of work between the fibers and between the bars of the machine.

The Jordan action, with a lower consistency and a more restricted area between bars, allows the fiber to move around and get in a better position to be cut by the actual contacting point of the two bars.

This brings up one other factor which we would like to show in regard to the design of the Hydrafiner. This is the use of a tapered plug as against a flat plate for maintaining the correct bar to bar clearance. On drawing L-322 (Fig. 5), you will note that for a definite value A, the travel of the plug, in the case of the disc type refiner, or attrition mill, is equal to X, whereas in

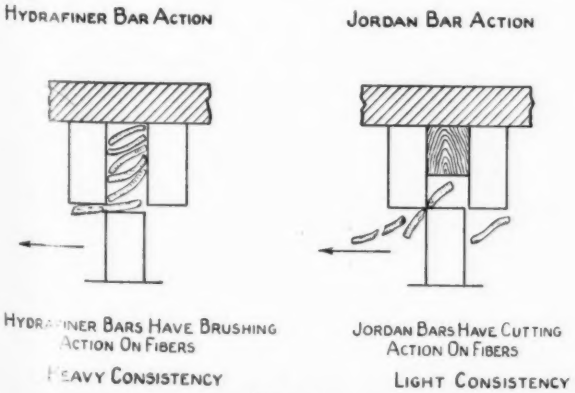

HYDRAFINER BAR ACTION
JORDAN BAR ACTION
HYDRAFINER BARS HAVE BRUSHING ACTION ON FIBERS
HEAVY CONSISTENCY
JORDAN BARS HAVE CUTTING ACTION ON FIBERS
LIGHT CONSISTENCY

Figure 4

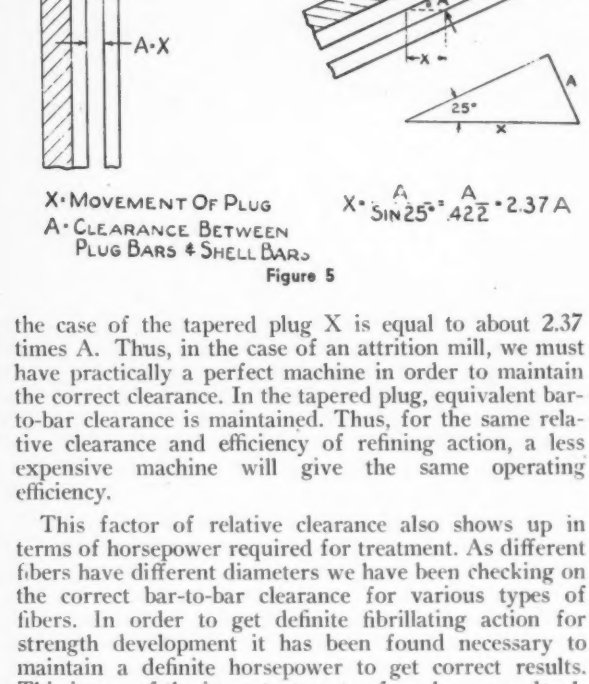


Figure 5

the case of the tapered plug X is equal to about 2.37 times A. Thus, in the case of an attrition mill, we must have practically a perfect machine in order to maintain the correct clearance. In the tapered plug, equivalent bar-to-bar clearance is maintained. Thus, for the same relative clearance and efficiency of refining action, a less expensive machine will give the same operating efficiency.

This factor of relative clearance also shows up in terms of horsepower required for treatment. As different fibers have different diameters we have been checking on the correct bar-to-bar clearance for various types of fibers. In order to get definite fibrillating action for strength development it has been found necessary to maintain a definite horsepower to get correct results. This is one of the important parts of work we are developing because it indicates the reason for some of the difficulties with refining machines, whether the conical type or the disc type. The reason is that they do not maintain the correct clearance of bar-to-bar to get the right type of action.

Another point which is important is that apparently bar width in itself has no definite effect on the work done. It is rather the area between the bars which is affected by bar width which indicates the amount of work done, as this gives you a variation in the capacity of the machine.

Therefore, in modern refiner fillings, narrow bars are used, the width in most cases being dependent upon the strength required per bar.

As Jordans are designed for cutting, the number of bars is a factor of the amount of cutting desired. Therefore, for correct jordaning operation, we use as many bars as we can and still get the capacity required through the machine.

In order to demonstrate that this method of stock preparation is essentially correct, we have been collecting samples of stock from different mills, at various operating points, and plotting the physical tests made from hand sheets.

Curve L-312 (Fig. 6) shows tests made on 100 per cent unbleached kraft fiber used in the manufacture of multi-wall bag treated in a No. 6 Hydrafiner. You will note the tear tests increased approximately 100 percent. The Mullen increased, the freeness drop was very small, and the shrinkage test increased very little. However, through the Jordans, we note the tear test dropped, the freeness dropped very rapidly, but the Mullen and tensile increased at a greater rate than that through the Hydrafiner.

Curve L-309 (Fig. 7) we ran the same type of tests on a 35# multi-wall grey kraft bag, treated in a No. 6 Hydrafiner, but you will notice there is one change. The tensile test, instead of increasing through the jordaning operation, decreased. This particular condition occurs when you use a highly pigmented sheet and it is generally known that the tensile test decreases when the fiber in this condition is cut.

To illustrate that these effects are independent of the type furnish, Curve 321 (Fig. 8), shows a furnish of approximately 24 percent soda, 26 percent bleached kraft, 26 percent unbleached kraft and 24 percent bleached sulphite treated in a No. 1 Hydrafiner. The trends are essentially the same. In the Hydrafiner, there was very little freeness drop, an increase in tear, a slight increase in shrinkage, a fair increase in Mullen and tensile. Through the Jordan, the freeness dropped very rapidly, the tear dropped very rapidly, and the Mullen, tensile and shrinkage increased quite rapidly. The freeness drop was carried to the point of satisfactory formation on the paper machine.

Curve L-320 (Fig. 9) shows a slightly different furnish in the same mill, namely 20 percent soda, 60 percent sulphite and 20 percent bleached kraft. The tests on this sheet are very similar in appearance, but of course being slightly changed in definite figures.

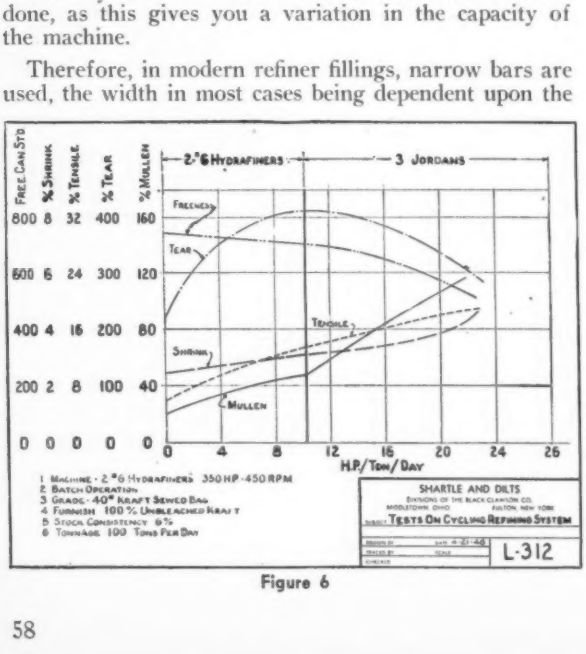


Figure 6

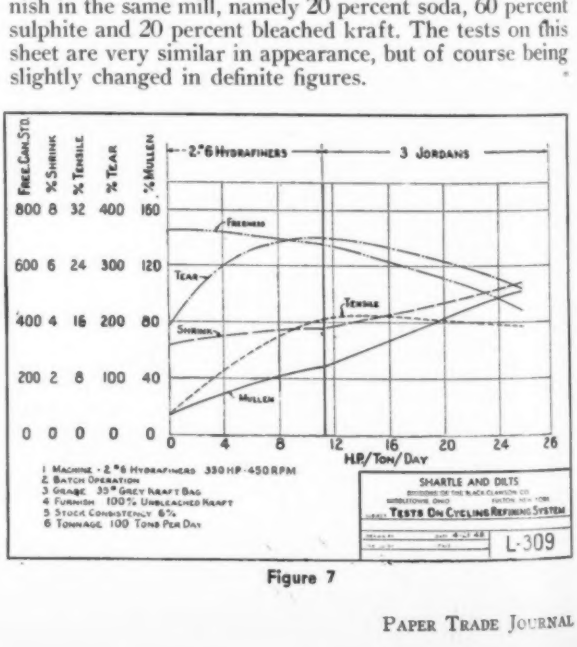


Figure 7

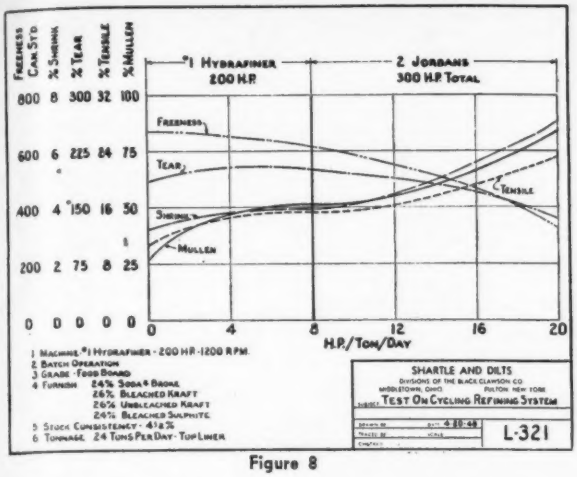


Figure 8

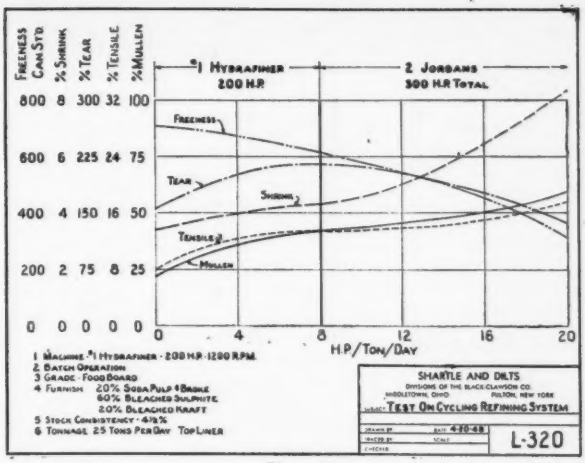


Figure 9

From this we can make the following assumptions:

(1) For sheets which require high tear strength, fairly high Mullen strength, with practically no freeness drop, stock preparation equipment should be basically, Hydrafiners.

(2) For sheets which require large freeness drop, with high Mullen development very low tear development, the stock preparation system should be predominantly Jordans.

(3) For sheets which require high tear strength and high Mullen strengths, the stock preparation system should have a combination of Hydrafiners and Jordans, the emphasis being on the particular tests required.

Correct application of these principles assures the maximum strength development of the types desired with the minimum horsepower.

Further tests are being run on other types of stock. We hope within the next year to have sufficient data so we can definitely point out to you the actual strength development which you may expect from any size of Hydrafiner operating under certain stated conditions.

You may have noticed that we have omitted from this discussion a very important factor of stock preparation and that is the slushing of your stock. We have assumed, of course, that for all mills that do not have slush stock systems, that you are doing this in the Shartle-Dilts Hydrapulper.

Economical Debarking of Wood
Two New Debarking Machines

By Otto Goy

The necessity of processing the raw material "wood" economically has probably never been as urgent as now in spite of the fact that thousands of cubic meters of wood are being burned most uneconomically in the stoves and ranges of homes, just to keep alive. With the increasing shortage of wood reserves and the destruction of forest stands, the debarking of wood had been already given much attention in the wood pulp industries. When the peeling by hand was replaced by peeling by machine, a greater loss of good wood had to be accepted. To avoid this loss the knife peeling machines were improved. Also new designs were brought out, but these did not afford an ideal solution of the problem. This is understandable when we consider the uneven shapes of the round logs. Either the rotating knives take away too much good wood, or bark parts remain on the logs, which must be removed by hand. The losses vary with the desired peeling degree.

On the basis of this intelligence it was tried to carry out the debarking of the wood by different means, namely in imitation of the natural detaching process of the bark and bast from the wood, as it occurs in the course of time through the influence of the weather. This process is accelerated by softening the bark in water. This resulted in the debarking machines and debarking drums as designed by Thorne, Guettler, Kamyr, Hellner, Johanson, Waplan, and others.

In the brown wood-pulp manufacture, it is true, debarking drums have been known for more than 50 years. Late in 1891, Bache-Wiig and Leopold Wertheim obtained German patents 66,375 and 67,020, according to which the debarking occurs through the mutual friction of the wood rolls in an actuated drum in warm water. These drums debarked steamed wood in 1 to 1¼ hours, while untreated wood took 3-4 hours, the drums working satisfactorily only with pine. Other wood could be debarked in this way only in the fresh state. The protracted rolling caused the wood to be crushed; at the ends of the logs brush-like fiber bundles or brooms were formed, in which bark particles and dirt collected, causing dirty stock. In addition, the brooms, which became detached during the grinding process, produced a relatively large quantity of splinters in the wood pulp and hence in the paper. For these reasons the drums never become popular in the production of white wood pulp.

The debarking of wood in drums was resumed by the Americans at the beginning of the century and successfully introduced in wood pulp manufacture on a large

scale. A report says that in 1926 about 250 debarking drums were in use. The achievements of the Americans were given fullest consideration in the Northern countries. Here conditions were very favorable for this method of debarking as the wood processed is predominantly floated timber. After having been in the water so long, the bark peels off the wood more readily.

In Germany the debarking machines have been adopted only in a few large works. Here one important condition for success is missing, the floating of the wood, as in America and in the Northern countries. The wood must be soaked in the drums before debarking, and the entire installation is too big and too expensive for medium and small mills.

The management of the G. Haindl'sche Papierfabrik in Schongau (Upper Bavaria) has for many years been engaged in the project of a wood-saving debarking of wood. An attempt was made to solve the problem by the action of water jets under a high pressure on the logs. The result of many experiments produced a drum of about 40 cm in diameter and 1.1 m in length, equipped on the inside with ribs of square iron. Between the ribs spraying pipes with radially directed nozzles were installed in longitudinal direction. The drum had a cover in front and in back for opening and closing and was filled about two thirds with logs. The required water pressure was furnished by an electrically driven water pump with about 90-110 psi pressure. When the water cock for the spraying pipes was opened, the logs contained in the fixed drum were set into rapid rotation, and after as little as about ½ minute the debarked logs could be removed from the drum. Since the filling and emptying of the drum required more time than the working process, a preliminary receptacle was added. This was filled during the working process, whereupon the entire charge was introduced into the drum by means of a ram, while at the other end of the drum the peeled logs were pushed out at the same time.

The logs coming from the stock piles could not all be completely debarked and a longer treatment was not advisable because of the splinter formation caused by the strong friction of the logs at the ribs. Therefore it became necessary to pre-connect a soaking installation, in which the timber coming from the stock piles was kept under water—the warmer the better—for about 8 hours.

This soaking plant for wood 2 m long is combined with two wet-debarking machines of 1.1 m in diameter for wood 1 m long in such a way that the peeling process proceeds continuously. The output of the installation is stated to be 80 to 105 cubic meter of wood in 8 hours, or 10 to 13 cu m per hour, with an energy consumption of 5.5 to 6.5 kwhr/cu m and a water requirement of 14 atm of 7 to 8 cu m/cu m.

A special advantage of the debarking machine is that it does a good job with crooked and knotty wood, and also pieces of very small diameter which when peeled by hand and with the same output would give great wood losses, or which could not be peeled at all with a knife peeling machine.

Moreover, the wood can be treated in the drum for any desired length of time, depending on the cohesion of the bark. The machine has no movable parts, and consequently there is little wear. Compared with the peeling by machine, the average wood saving is 7%. While the machine itself is simple and can therefore be produced at a low cost, the cost of the necessary conveyors, through which the high output with little labor becomes possible, are rather high. However, in a few years they are paid off and are not important as compared with the saving of valuable raw material.

Another new machine is the peeling machine for beechwood designed by the Waldhof Cellulose Works. When in 1937 the processing of beechwood to pulp was taken up on a large scale, there were as yet no suitable machines for the peeling of billet wood; the machines used for fir were not suitable. The peeling effect of this Waldhof machine is obtained by beats on the bark in the direction of the circumference. For this purpose the machine has two engaging, rotating beating disks in three parts, on whose circumference there are disposed in all 30 exchangeable inserts, protruding about 1½ mm, of specially improved steel or hard metal. The drive of the beating disks is effected by two electric motors of 2.5 HP each over V-belts. The billets are moved back and forth, resting with the bark surface on both beating disks. In the case of very knotty wood it is well to do a little subsequent cleaning by hand, in the interest of a saving of wood.

The Waldhof beech peeler BS can be used for bolts as well as for billets. It is supported on tubular sliding runners, so that it can easily be pushed close to the wood stacks.

Beechwood is most easily debarked immediately after felling. This favorable state wherein the bark is easy to remove, unfortunately, lasts only about 3 weeks. After this due to the drying process, the bark is especially tight during the next 6-8 weeks, thus making the peeling output of a worker to decrease 30 to 50%. It is only when through the further drying process and by the action of fungi in the Fall the bark gradually peels off by itself, that the peeling output increases again. In Germany the expected yearly average is 4 to 5 cubic meter a day per person. The output of the Waldhof machine, on the other hand, is stated to be 7 to 15 cubic meter per worker, depending on the thickness of the billets. Hence, when peeling by hand, more than twice as many workers are needed as for peeling by machine. For mechanical peeling, however, the wood loss of 5 to 7%, depending on the quality and size of the billets, is of course somewhat larger than for manual peeling—on the average about 1.4%—yet it is still favorable. The energy consumption is stated to be 1.95 kwhr per cubic *meter* of wood.

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

Some New Thoughts Regarding The Cylinder Machine

(Continued from page 55)

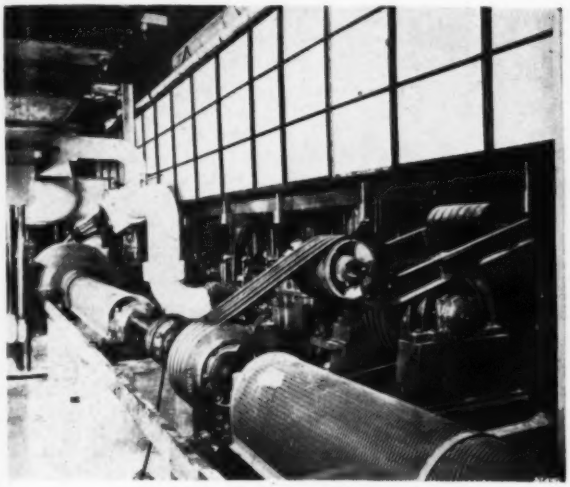


Figure 9—Showing the drive.

the design of the dryers with the countersunk head bolts and the streamlined hand-hole covers.

The framing is made particularly high so that no pit will be required. This is an advantage to which anyone who has handled broke from a pit can testify.

(Fig. 8—Showing the Dry End)—Here is the dry end of the same machine. The two calender stacks are almost visible. The hood is quite evident and the four-drum winder in the foreground.

I haven't mentioned the two-drum upright reel, but that does have one very attractive feature which you will be hearing more about in the future. This is the regenerative braking device. It is an electric and full automatic way of obtaining a constant tension in the sheet when being wound and unwound.

(Fig. 9—Shows the Drive)—This machine is equipped with a sectional electric drive. However, the dryer sections are all driven from one large DC motor in the center of a lineshaft. This lineshaft is on the machine room floor. Each section of dryers is driven from this lineshaft by V-belts and vari-pitch sheaves. The draws are controlled by these vari-pitch sheaves. Of course the sheaves drive a right angle spiral bevel gear unit which in turn drives the dryer pinion. This is one of simplest vari-pitch sheave drives and in its simplicity lies its particular merit.

This machine has been in operation for some months and is now making 25 percent more than its rated capacity of the finest, most level, best finished board of its kind.

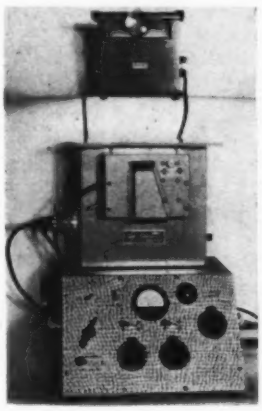
I will endeavor to answer any questions which may come to mind.

EQUIPMENT AND SUPPLIES

Hunter Colorimeter and Color-Difference Meter

An instrument designed for the rapid and precise evaluation of small color differences has been marketed under the name of Hunter Photoelectric Colorimeter and Color-Difference Meter.

The unit is a photo-electric tristimulus colorimeter measuring color on



three scales resembling the L, a and b scales devised by Scofield. In the new apparatus, photocell windows and the measuring circuits have been selected so that the three values of color are read directly from 10-turn potentiometer rheostats. These three rheostats may be set to the values of some standard color and a specimen of somewhat similar color then placed in exposure position. As a selector switch is turned to each of the three positions, deflection of the current-detecting galvanometer shows the magnitude on that scale of the color difference between the specimen and the standard.

The apparatus is thus designed to detect small differences directly and to meet the needs of industry for equipment to maintain quantitative color differences.

Descriptive literature available from Henry A. Gardner Laboratory, Inc., 4723 Elm Street, Bethesda 14, Md.

Transtractor

The Transtractor is designed to handle live and semi-live skids by electric power. It offers full driving traction when lifting loads, maneuverability virtually equal to that of a hand lift jack, and capacity to handle skid loads of literally any size, the maker states.

The unit is built around the chassis and driving unit used on the same manufacturer's Transporter motorized platform and pallet trucks and the Transtractor push-pull unit. Trailing wheels and lifting arm are mounted on a specially-designed rear-end frame, which is the core of the unit's operation. The lifting arm is slightly forward of the trailing wheels, which are so built and positioned that they enter beneath either a live or semi-live skid between the skid legs or wheels. Positioning of the lifting arm ahead of the trailing wheels provides full traction when a heavy skid load in lifted. Position of the trailing wheels, together with the design of the frame, permits

the unit to jack-knife virtually to a 90-degree angle.

Both lifting arm and trailing wheel assembly are built to the specifications of the skids to be handled.

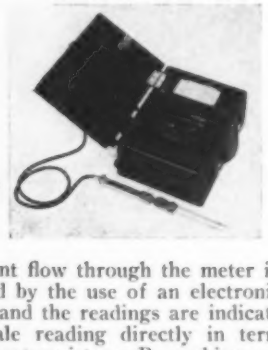
The new truck is equipped with Automatic Dual Lift foot pump, which reduces by an average of one-third the foot pressure necessary to lift loads into moving position. It combines a low

pressure (high speed) hydraulic cylinder for raising the lifting arm into contact with the skid and a high pressure (low speed) cylinder for raising the load.

Design of the unit includes features built into the maker's regular motorized hand truck line: "dead man control," double-position brake, enlarged bumper guard for "protective clearance" around working mechanisms, accessibility of all parts within the drive unit and lifting mechanism, and simplified arrangement of controls so that they may be operated virtually simultaneously with one hand, except on Dual Lift models where foot pressure is used for lifting. For details and prices write to Automatic Transportation Co., 101 West Eighty-Seventh street, Chicago 20, Ill.

Thwing-Albert Electronic % Moisture Meter

The Thwing-Albert % Moisture Meter is a battery operated instrument which measures the resistance to the flow of an electric current, this resistance changing with the moisture content of the material being tested. The



current flow through the meter is amplified by the use of an electronic circuit, and the readings are indicated on a scale reading directly in terms of per cent moisture. By making suitable calibrations, the instrument can be used for determining the % moisture in paper, straw, wood, textiles, grains and a variety of other materials. Standard calibrations are from 4% to 50%, and ranges can be extended in either direction as the need for such scales arise. A Comparison made between the Moisture Meter readings for paper, and oven test results for the same material, showed a maximum difference of 1% in the range from 7% to 25% moisture. The reproducibility of the Moisture Meter results compares favorably with that of oven testing, which is known to have an inherent error of from 1% to 2%, the maker states. For details and prices, write to Albert Thwing Instrument Co., 5341 Pulaski Avenue, Philadelphia 44, Pa.

Steam Jacketed Flowrator Meters Molten Solids

A new steam jacketed *Flowrator* — rotameter type — instrument designed for materials having high melting points such as molten sulphur, napthalene and phosphorus has been marketed by the Fischer & Porter Co.

Remote totalization, recording and control of the flow rate is available. Flow indication also is provided at the primary element as illustrated in cut. The meter indicating extension is furnished with steam heating coils and the entire meter body is jacketed for

100 p.s.i. steam gauge pressure to insure that the material metered remains in the liquid phase in all parts of the metering instrument.

Report of many highly successful installations confirm the soundness of this new "severe service" meter design. In one typical application in a sulphuric acid plant, molten sulphur is being metered. A decrease in sulphur flow rate through the meter immediately indicates sulphur burner clogging and a decrease in production efficiency. The sulphur flow rate rises and the plant operation is restored to capacity production when the burner is cleaned.

For details and prices write to the Fischer & Porter Co., Dept. 4FK, Hatboro, Pa.

A Heavy Duty Non-Electric Magnetic Separator

Operating and design characteristics of the Eriez Permanent Non-Electric *Giant* Magnetic Separator makes it adaptable for the removal of tramp iron and ferrous particles in paper processing lines, the manufacturer claims. Newly-designed Alnico castings provide a deep, constant and uniform magnetic field which will remove tramp iron from wood chips or slurries. Special face plates built to the individual application are of abrasive-resistant steel and are furnished in either a flat or stepped pole face.

The *Giant* magnet is available in two models, one for stationary installation in open gravity flow chutes, the other, equipped with hinges and latches, is recommended for enclosed gravity flow chutes. Both models are fully insulated to allow direct installation on steel.

These units are recommended for use in gravity flow chutes leading to a wood hog in gravity flow chutes preceding the digester, and in gravity flow chutes in paper slurries. The *Giant* magnet also can be furnished in a special housing known as the magnetic *Hump* and designed for inclusion in paper slurry lines.

For details and prices write to Eriez Manufacturing Company, 3165 East 12th Street, Erie, Pa.

Opti-Chek

The Opti-Chek is a machine for registering and mounting corrugated box rubber printing dies which the maker states virtually eliminates "press down" time heretofore required for make-ready. The operator can pull color proofs with it quickly and accurately in any quantities desired and in any colors specified. The machine also permits storage of color dies completely mounted, in register for reprinting.

Opti-Chek utilizes an optical principle which the maker states eliminates trial-and-error operations in registering, cutting counting time from hours to minutes. No press is needed for registering, mountnig or color proofing.

For details and prices, write to James H. Matthews & Co., 4086 Forbes Street, Pittsburgh, Pa.

Inco Issues New Booklet On Galvanic Corrosion

A new booklet discussing various aspects of galvanic corrosion has been issued by The International Nickel Company. Prepared under the supervision of the Company's corrosion engineering section, it is designed for the production man as well as the research engineer.

Factors influencing galvanic corrosion are presented in the booklet, also data on how galvanic effects can be minimized. Address International Nickel Company, 67 Wall Street, New York 5, N. Y.

Pacific Paperboard Co. Building Longview Plant

LONGVIEW, Wash.—Construction of a $2,350,000 newsprint mill, with an annual capacity of 40,000 tons, is now underway here. The mill is owned by a syndicate of newspapers and will be operated under lease by the Pacific Paperboard Co. of Longview.

Patrick J. Moore, of Moore & Co., consulting engineers, San Bernardino, Calif., is in charge of construction, with Conrad J. Kern of Philadelphia as chief consultant. E. E. Flood is president of the paperboard company.

Brown's S. B. Head Heads South

PITTSFIELD, Mass.—Sanford B. Head left here on June 12 to take up new duties as territorial representative of the Brown Co. of Berlin, N. H., in South Carolina, Georgia, Alabama, Tennessee and Florida. Accompanying Mr. Head was William LaRose of New York, assistant manager of the paper division of the company.

SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Effect of Petroleum Base Additives on Sulphite Pulping and Papermaking*

By W. A. Beman[1] and H. E. Corbin[2]

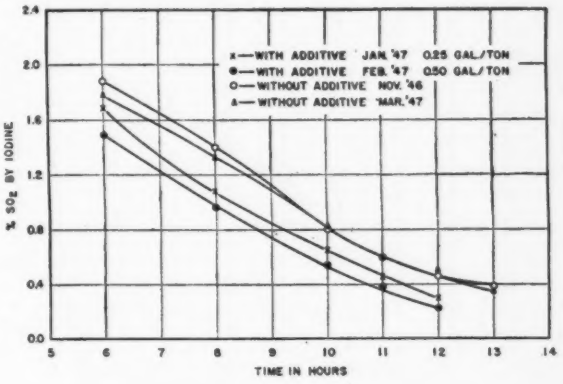
Abstract

The use of an emulsified petroleum base additive in sulphite pulping has been shown to give better acid penetration resulting in decreased cook time or temperature. Desirable auxiliary effects resulting from a change in the pitch characteristics of the pulp are reflected in improved pulp and paper mill operations. Details of the development and mill application of the product are outlined.

Attempts have been made to use digestor additives in sulphite pulping to produce increased rate of acid penetration insofar as this is related to cooking conditions, screening efficiency, and fiber characteristics. In the initial mill trials, with the additive herein described, a particular objective was pursued, namely, control of the pitchy constituents of the pulpwood by modification, dispersion, or solution to give improved papermaking qualities. It was found that the agent accomplishing this also increased acid penetration by apparently acting as a wetting-out agent for the resinous materials in the cellulosic structure. As the trial progressed at the particular mill from which these data were obtained, it was found that the effects of increased acid penetration were of greater importance, although the original purpose had been attained.

A trial was arranged at a Mitscherlich mill having eight horizontal indirect cook digesters each of ten tons capacity, charged by a gravity cold acid system. The pulpwood was Northeastern spruce; the cooking acid was calcium base of approximately 5.5% total SO_2.

In addition, the pulp mill contains a small cylinder machine which operates on slush pulp and produces light weight free sheets such as twisting, waxing and carbonizing grades. Operated as a separate unit in conjunction with the pulp mill is a single fourdrinier paper machine which also manufactures light-weight free sheets. The combined capacity of the two paper converting units requires only a small fraction, however, of the total production of the pulp mill.



Product Development and Evaluation

The industry has for many years used petroleum distillates, notably kerosene, as a means of combating pitchy conditions. Kerosene, however, has limited solubility characteristics and from the standpoint of a suitable petroleum product that might be used to dissolve the natural wood resins, it was felt that a base oil or solvent having high solvent power for pitch should be chosen. This decision narrowed the choice to a series of special aromatic oils, the manufacture of which had been extensively developed as a result of wartime refining techniques. The choice of material was further predicated on the fact that one member of this series had proved to have considerable merit for pitch removal from wires and cylinders of paper machines that had to be cleaned as a result of excessive pitch in the stock.

To facilitate addition of the material to the system, it was decided to convert it to the aqueous phase which was accomplished by adding a controlled amount of emulsifier and water and so adjusting the formulation that the resultant product was stable to reasonable conditions of transportation and storage. It might be added that the emulsifier used enables the concentrated product to be very highly diluted with water or Mitscherlich cook liquor without destroying the emulsion and, in addition, possesses the property of being substantive to cellulosic materials. Table I gives pertinent typical

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* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Socony-Vacuum Oil Co., Inc., Albany, N. Y.
[2] Socony-Vacuum Oil Co., Inc., Brooklyn, N. Y.

TABLE I.—CHARACTERISTICS OF THE EMULSIFIED PROCESSING ADDITIVE

Type	Acid stable emulsion
Appearance	White viscous liquid
Moisture, %	30.0% average
Weight per gallon, lb.	7.9
pH	3.5 to 4.5
Base stock	Aromatic oil
Dilution test	Satisfactory at 70° F.
Resistance to hard water	+1,000 p.p.m.
Resistance to alum	Good
Resistance to alkali	Poor
Freeze test	Negative

characteristics of the addition agent.

The preliminary plant test was made on the basis of adding 1% of the material to the chips; assuming that the chips contained 1% pitch, the amount was equal to the pitch present. While 1% was probably not the exact amount of pitch, it represents a fair approximation of the average pitch content based on ether extractions.

The principal observation from the initial test was that the treated pulp gave superior performance on the mill's fourdrinier paper machine, although it was realized that the treatment at the high concentration level was not economical. It was felt, however, that the preliminary work was justified on the basis of obtaining a positive indication of the effect of the treatment.

In initiating a continuous test, it was realized that two factors would have to be considered: (a) the solvent treatment would exert a dissolving action on the old pitch deposits in the lines and equipment at some certain critical concentration which had to be established; (b) Volatility of some components of the additive might be introduced in the acid makeup with the sulphur dioxide relief gases.

The test was begun by adding 2.5 gallons per ton of chips to alternate digesters and continued on this basis for approximately 60 hours at which time the dosage was increased to 2.5 gallons per ton of chips for each digester. The product was added directly to the chips while the digester was being charged, although a more uniform and practical method of application for continuous

TABLE II. *Continued on Next Page*

Cook No	Date	Hardness Avg.	Bleach % Cl_2	Cook Liquor % Free SO_2	Cook Liquor % Total SO_2	Avg. Dirt Count	Bleach Shrinkage	Pulp Tonnage Kamyr	Bleach	Screenings	Slush	Total	Treatment
2192/99	10/30/46	34.4	3.02	4.42	5.47	3934	1.24	68.49	17.69	...	0.20	87.62	None
2200/06	31	31.9	2.44	4.71	5.72	4040	0.72	53.44	10.34	4.54	0.53	69.57	"
	11/1/46		1.76	4.57	5.60	3675	0.42	65.80	16.17	...	0.66	83.05	"
	2		2.49	4.53	5.52	4688	0.76	50.04	10.89	3.60	0.42	65.71	"
	3		2.90	4.47	5.57	4760	1.16	44.68	16.54	...	...	62.38	"
	4		2.67	4.60	5.59	4557	1.07	65.97	15.30	...	0.49	82.83	1.25 gal. per ton
	5		2.30	4.73	5.74	4659	0.45	65.91	6.48	2.90	0.76	76.50	"
	6		3.07	4.76	5.92	4226	1.07	53.33	15.33	...	0.47	70.20	2.5 gal. per ton
	7		2.60	4.73	5.77	4730	1.11	69.22	15.86	...	1.25	87.44	"
2262/68	8	26.4	2.73	4.95	5.91	4300	1.09	70.14	15.53	...	4.61	91.73	None
2262/71	9	30.7	2.81	4.24	5.66	4232	0.94	70.68	13.45	...	6.82	91.89	"
	10	36.9											"
2288/95	11	33.1	3.75	4.62	5.62	3756	1.11	57.50	15.83	...	6.80	81.24	"
2296/2303	12	28.7	3.89	4.73	5.71	3216	0.78	56.74	11.08	3.20	7.44	83.80	"
2305/12	13	33.6	3.73	4.47	5.50	3830	1.02	52.66	14.63	...	6.93	75.24	"
2313/21	14	34.0	4.08	4.48	5.46	4081	0.74	59.20	10.61	2.54	6.60	79.69	"
2322/29	15	33.7	3.25	4.43	5.46	4541	0.83	57.88	11.86	...	5.40	75.97	"
2330/36	16	30.4	4.27	4.33	5.37	5321	0.97	59.29	13.83	...	5.98	80.07	"
2339/45	17	30.4											"
	18		5.31	4.79	5.79	10.937	0.35	48.30	5.06	6.64	5.36	65.71	"
	19		3.61	4.71	5.75	....	0.82	....	11.72	...	4.56	17.10	"
	20		3.65	4.99	6.19	....	0.75	....	10.73	...	6.07	17.55	"
	21		3.69	5.34	6.53	....	0.87	....	12.46	...	7.10	20.43	0.25 gal. per ton
	22		3.78	4.51	5.81	....	0.91	....	12.98	...	5.88	19.77	"
	23		4.38	...	...	....	0.87	....	12.42	...	6.38	19.67	"
	24												"
	25		4.66	4.37	5.70	....	0.95	....	13.60	...	5.66	20.21	"
	26		5.49	3.37	4.49	....	0.93	....	13.28	...	5.85	20.06	"
	27		4.02	3.85	4.91	....	1.03	....	14.68	...	5.61	21.32	"
	28		3.33	4.03	5.31	....	0.83	....	11.80	...	...	12.63	"
	29		2.86	4.54	5.79	....	1.00	....	14.33	...	...	15.33	"
	30		5.23	...	...	....	0.75	....	10.76	...	...	11.51	"
	12/1/46												0.25 gal. per ton
	2	...	5.94	4.41	6.09	....	0.86	4.89	12.23	...	5.40	23.38	"
2383/84	3	41.5	4.59	3.69	5.13	4779	...	36.91	11.96	...	...	48.87	"
	4		4.72	3.56	4.93	....	0.67	32.60	9.61	2.68	...	45.56	"
2389/95	5	31.3	5.57	3.64	4.79	4640	...	59.99	12.94	...	...	72.93	"
2396/2404	6	31.9	6.27	3.88	4.84	4190	0.56	59.70	8.13	2.70	...	71.09	"
2405/10	7	37.0	6.25	4.49	5.52	4065	...	51.66	12.00	...	...	63.66	"
2410/16	8	31.9											"
2415/23	9	34.6	4.10	4.80	5.82	4281	...	50.73	13.76	...	...	64.49	"
2424/30	10	31.0	4.90	4.79	5.79	4362	0.90	60.73	12.80	...	7.87	82.30	"
2433/38	11	34.3	4.50	5.11	6.18	4216	...	61.16	14.62	...	...	75.78	"
2439/46	12	32.0	4.44	4.75	5.74	4071	1.76	63.85	12.01	...	0.89	78.46	"
2447/55	13	31.6	4.56	4.88	5.90	3909	0.92	68.28	13.13	...	0.66	82.99	"
2456/63	14	32.9	4.90	5.20	6.29	4059	0.90	61.92	12.82	...	0.90	76.54	"
2464/71	15	29.7											"
2472/79	16	30.6	4.70	5.34	6.37	4355	2.50	56.48	12.48	...	0.87	72.33	"
2480/87	17	30.6	5.23	4.97	5.97	4514	0.64	59.46	9.09	...	4.79	73.98	"
2489/90	18	30.0	3.91	4.81	5.75	4173	1.00	17.91	14.24	...	2.47	35.62	"
2491/97	19	34.5	3.82	5.02	6.07	4195	0.95	25.91	13.65	...	2.10	42.61	"
2498/99	20	32.0	3.08	5.44	6.49	4346	0.84	26.22	11.98	...	1.02	40.06	"
2500/07	21	30.0	3.36	4.68	5.68	4202	0.81	66.76	15.55	...	1.08	80.20	"
2509/15	22	31.0											"
2516/24	23	30.2	3.11	4.74	5.74	4049	0.91	65.30	13.03	...	3.43	82.67	"
2525/26	24	30.5	3.39	...	...	4584	0.29	20.11	4.12	...	1.20	25.72	"
2527/33	26	29.5	3.27	5.01	6.00	4332	0.91	45.38	12.96	...	3.25	62.60	"
2534/39	27	31.3	3.03	4.77	5.82	4239	0.86	62.88	12.35	...	5.30	81.39	"
2540/47	28	34.3	3.01	4.75	5.75	4361	...	34.72	12.21	...	...	46.93	"
2549/53	29	32.7											"
2554/61	30	32.0	3.81	4.93	5.95	4083	0.64	65.18	9.14	2.73	5.27	82.96	"
2562/66	31	30.2	3.27	5.09	6.10	4052	1.00	60.88	14.25	...	4.33	80.46	"
2569/1	1/1/47	32.5	3.43	4.92	5.91	4052	0.91	4.83	12.99	...	5.21	23.94	0.25 gal. per ton
2/9	2	33.2	3.18	4.38	5.34	4178	0.71	58.38	10.09	...	4.45	73.63	"
10/16	3	31.9	3.83	4.59	5.52	4195	1.15	52.89	16.48	...	5.94	76.46	"
17/23	4	32.3	3.81	4.80	5.75	4133	0.89	47.96	12.75	...	4.93	66.53	"
26/33	5	31.9											"
34/40	6	32.3	3.10	5.17	6.20	11673	1.02	54.58	14.64	...	...	70.24	"
41/48	7	31.3	2.57	4.93	5.83	4930	1.04	57.68	14.88	...	...	73.60	"
49/57	8	28.7	3.45	4.92	5.87	4223	0.75	61.20	10.70	3.52	...	75.09	"
58/64	9	32.6	3.39	4.80	5.76	4102	1.13	55.25	16.11	...	...	72.49	"
65/72	10	29.9	3.28	4.90	5.85	4145	0.65	57.37	9.22	3.18	...	70.42	"
73/81	11	29.0	3.51	4.90	5.87	4070	1.08	59.34	....	...	...	75.90	"
81/89	12	34.5											"
90/97	13	34.5	3.78	4.72	5.69	4178	1.15	55.88	16.44	...	...	73.47	"
99/104	14	28.8	3.41	4.90	5.84	4181	1.14	46.37	16.22	...	...	63.73	"
105/109	15	31.0	2.73	...	...	4238	0.71	43.39	10.07	1.09	...	55.26	"

* Revised Dirt Count Method.

operation would be to meter the emulsion directly into the acid line feeding the digester. However, after running an additional 30 hours at this concentration extremely large pitch balls suddenly appeared in the slush pulp system.

From the dark appearance of the agglomerated material it was felt that this was previously deposited pitchy material. Close inspection of the screens, the thickeners, and the Kaymr cylinder and press section indicated that old deposits of a heavy nature were being gradually removed. A brass plate on the brown stock decker which initially was heavily coated with resinous material eventually became entirely bright and shiny, as operations were continued. It was felt that this was an indication of the solvent action of the material on pitch deposits, and there was general agreement that the source of the trouble was the loosening of the old deposits. However, to prevent additional temporary operating difficulties, it was decided to discontinue the treatment until the system had cleared itself.

In spite of the excessive amount of this old pitch, no difficulty was caused in the operation of the Kaymr machine. The press rolls lost their coating of pitchy materials and brightened with continued operation in the same manner as the doctor on the decker.

Following a scheduled cleanup, 2 weeks later, dosage was resumed at the rate of 0.25 gallons per ton of chips and continued on this basis for 8 weeks. The treatment

TABLE III.—CHARACTERISTICS OF EXTRACTED PITCH

	Extracted Pitch From	
	Untreated Pulp	Treated Pulp
Viscosity at 210° F., S.U.S.	733	558
Ring and ball softening point, °F.	100.5	98
Needle penetration at 32° F., 100 gms., 5 secs.	37	41
Tackiness *	83	64

* Tackiness is determined by measuring the force required to pull a spherical ball from an embedded position in the surface of the sample in question. A higher reading indicates a material of greater tack.

Continued from Opposite Page

TABLE II.

Concluded on Next Page

Cook No.	Date	Hardness Avg.	Bleach % Cl_2	Cook Liquor % Free SO_2	Cook Liquor % Total SO_2	Avg. Dirt Count	Bleach Shrinkage	Pulp Tonnage Kamyr	Bleach	Screenings	Slush	Total	Treatment
110/118	16	30.6	3.12	4.26	5.43	4259	0.99	60.31	14.11	...	...	75.41	"
119/126	17	31.0	2.98	4.47	5.43	4188	1.07	58.87	15.24	...	...	75.18	"
127/134	18	31.7	3.47	4.60	5.53	4151	0.84	57.48	11.95	2.59	...	72.86	"
135/42	19	35.6											"
143/48	20	31.8	3.11	4.97	5.93	4107	1.00	48.82	14.24	1.86	...	65.92	"
149/56	21	31.9	2.99	4.55	5.44	4113	1.23	63.33	17.59	...	...	82.15	"
158/65	22	33.0	3.41	4.62	5.64	4081	1.08	59.88	15.41	...	...	76.37	None
167/74	23	32.3	3.06	4.71	5.71	3842	1.09	65.08	15.60	...	...	81.77	"
176/81	24	29.0	4.57	4.63	5.67	4128	1.11	52.70	15.79	...	...	69.60	"
182/89	25	31.6	2.85	4.72	5.77	4157	1.05	62.24	15.06	...	...	78.35	"
190/97	26	30.2											"
200/04	27	28.5	2.76	4.76	5.78	4227	1.17	36.78	16.73	...	4.68	59.36	"
205/11	28	27.7	2.65	4.79	5.80	4157	1.00	54.28	14.34	0.49	3.53	73.56	"
212/20	29	29.2	3.21	4.87	5.95	4108	1.11	63.83	15.81	...	3.76	84.51	"
221/28	30	33.1	2.98	4.88	5.88	4773	0.73	63.61	10.49	4.41	1.92	81.16	"
229/35	31	28.0-9	2.77	4.65	5.64	4756	1.15	52.50	16.41	...	3.50	73.56	"
237/44	2/1/47	29.6	2.63	4.67	5.65	4751	1.13	59.66	16.08	...	3.94	80.81	"
245/52	2	30.5											"
253/58	3	28.8	2.90	4.60	5.60	4489	1.05	66.65	14.96	...	4.45	87.11	"
261/69	4	29.3	2.72	4.58	5.59	4572	1.09	57.25	15.64	...	2.78	76.76	"
271/78	5	28.5	3.13	4.73	5.74	4222	0.69	65.70	9.97	4.62	4.16	84.96	"
279/86	6	32.1	2.95	4.70	5.69	4417	1.08	65.17	15.47	...	6.08	87.80	"
288/95	7	29.3	2.63	4.40	5.41	4510	1.06	63.73	15.12	...	8.07	87.88	"
297/305	8	30.4	2.61	4.41	5.53	4372	0.93	63.64	13.27	0.88	8.84	87.56	"
307/13	9	28.5											"
315/19	10	27.6	3.29	4.36	5.27	4840	1.11	42.97	15.80	...	6.20	66.08	"
320/28	11	31.0	2.94	4.28	5.32	4901	1.18	61.22	16.90	...	4.76	84.06	"
329/36	12	30.6	3.21	4.52	5.48	4522	0.90	59.04	12.81	2.40	3.61	78.76	"
338/41	13	30.7	2.95	4.47	5.46	4638	0.66	33.04	9.39	3.22	8.14	54.81	"
343/49	14	31.5	3.75	4.34	5.31	4339	1.05	50.63	14.95	...	5.77	72.40	"
349/54	15	29.6	3.53	4.37	5.34	5121	0.56	34.26	7.95	4.95	6.44	54.16	"
355/62	16	28.1											"
362/70	17	30.7	2.91	4.25	5.21	4833	1.07	58.34	15.25	...	6.64	81.30	"
371/78	18	32.2	2.58	4.26	5.19	4757	1.12	55.32	16.06	...	7.89	80.39	0.50 gal. per ton
380/88	19	31.4											"
	20												"
405/12	21	38	2.92	4.40	5.35	5763	1.12	63.85	15.93	...	8.67	89.57	"
413/19	22	31	3.02	4.32	5.22	5298	1.20	67.26	17.14	...	6.68	92.28	"
420/425	23	33	...	4.21	5.26	5071	1.15	66.69	16.48	...	...	84.32	"
426/33	24	31	3.35	4.34	5.21	5221	0.55	63.53	7.82	6.10	6.14	84.14	"
434/43	25	33	3.25	4.30	5.26	5590	0.70	67.78	10.04	4.60	7.83	90.95	None
444/51	26	33	3.71	4.20	5.19	5221	1.11	61.32	15.91	1.81	8.07	88.22	"
452/60	27	31	3.20	4.23	5.24	4827	1.30	64.82	18.61	...	8.73	93.46	"
461/71	28	29	3.85	4.26	5.28	5040	0.90	64.73	12.96	5.12	9.86	93.58	"
472/79	3/1/47	29	3.30	4.29	5.25	4617	1.34	63.88	19.12	...	9.21	93.55	"
480/87	2	31	...	3.95	4.96	4887	1.04	64.50	14.80	2.16	...	82.50	"
488/95	3	31	4.19	4.07	5.12	5025	0.98	51.90	14.01	1.16	6.98	74.67	"
496/98	4	29	3.79	3.57	4.73	4699	0.98	43.55	14.03	1.97	5.48	66.01	"
499/504	3/4/47	29	3.79	4.04	5.05	4699	0.98	43.55	14.03	1.97	5.48	66.01	"
505/10	5	35	3.32	3.90	4.97	5291	1.16	45.05	16.62	...	6.74	69.58	"
511/18	6	32	3.10	3.86	4.92	4995	0.92	55.90	13.17	2.49	7.04	79.52	"
519/25	7	26	3.42	3.97	4.94	4887	1.14	57.92	16.26	...	5.53	80.85	"
526/33	8	27	3.17	3.96	4.93	4831	0.80	59.03	11.47	3.77	6.80	81.87	"
534/35	9	...	...	3.69	4.80	....	1.13	....	16.16	...	...	17.29	"
536/43	10	32	2.69	4.25	5.32	4689	1.31	52.27	12.96	0.42	6.32	79.07	"
544/52	11	30	3.22	4.22	5.21	4931	1.07	62.49	15.21	...	8.00	86.77	"
553/62	12	32	3.39	4.09	5.14	4746	0.85	59.76	12.13	3.60	8.28	84.62	"
563/71	13	32	3.02	4.27	5.25	4908	1.09	66.05	15.63	...	5.66	88.43	"
572/79	14	...	2.96	4.22	5.20	4949	0.98	66.25	14.03	3.82	6.62	91.70	"
580/86	15	34	3.63	4.17	5.19	4930	1.11	65.02	15.89	...	7.34	89.36	"
587/94	16	29	...	...	...	....	...	....	....	...	...	....	"
595/602	17	35	2.81	4.17	...	5119	1.23	67.76	17.56	...	6.20	92.75	"
603/12	18	32	2.82	4.24	5.18	5190	0.78	61.39	11.17	4.39	7.95	85.68	"
613/21	19	32	2.87	4.30	5.19	5152	1.11	62.42	15.91	...	6.08	85.52	"
622/29	20	30	3.96	4.19	5.18	5223	1.15	66.96	16.36	...	8.01	92.48	"
630/38	21	31	3.67	3.95	5.02	5246	0.70	66.53	10.07	5.74	3.79	86.83	"
639/47	22	32	3.94	4.14	5.17	5433	1.20	65.92	17.08	...	7.52	91.72	"
648/56	23	30	...	4.14	5.10	....	0.76	66.97	10.82	4.82	...	83.37	"
657/66	24	32	2.84	4.15	5.12	5796	1.16	69.98	16.62	1.10	5.84	94.70	"
667/75	25	29	3.25	4.05	5.05	*678	0.93	69.61	13.26	3.35	8.43	95.58	"
676/84	26	29	2.43	4.10	5.10	*713	1.19	67.71	16.93	...	7.83	93.66	"
685/92	27	32	2.76	4.27	5.28	*630	1.20	64.05	17.08	...	5.90	88.23	"
693/700	28	30	2.62	4.25	5.19	*672	1.12	71.67	16.01	...	5.30	94.10	"
702/10	29	34	3.26	4.24	5.28	*638	0.82	66.80	11.67	5.66	5.36	90.31	"
711/19	30	29	...	4.31	5.29	....	1.19	70.21	16.94	...	...	88.34	"
720/27	31	29	3.51	4.37	5.42	*657	0.84	35.91	12.02	2.04	2.08	52.89	"
728/36	4/1/47	33	3.41	4.28	5.23	*653	1.15	64.07	16.44	...	4.82	86.48	"

* Revised Dirt Count Method.

was discontinued for observation of results for a 4-week period. Treatment was started again for 1 week at a rate of 0.50 gallons per ton of chips and then discontinued for a further period of nine weeks. Following this, operation has been continuous at the rate of 0.25 gallons per ton of chips. A table of pertinent operating data, abstracted from the mill records covering the period discussed above, November 1946 to June 1947, is given in Table II.

Discussion of Results

A considerable amount of work has been expended on running extractions on the finished pulp samples collected during the run, but in general, the results do not indicate a definite change in percentage of extractable materials. It should be realized that the usual standards of measuring pitch as a direct function of extractable material cannot be used in analyzing these data. A certain amount of residual oil from the additive is known to be in the treated pulp and will obviously be extracted by conventional solvents such as ether, alcohol or ethyl acetate.

However, it should be emphasized that pitch content is normally determined by extraction, only to give an indication of the performance of the pulp in papermaking. It is a recognized fact, for example, that highly oxidized pitches, although extractable, are not troublesome in papermaking. Regardless of the extractable matter in a given pulp, the final criterion is always the performance of the pulp on the paper machine; and any treatment that modifies the tackiness characteristics of unoxidized resins, or disperses the troublesome pitch, is in effect equivalent to removing the pitch. Based on observations made during and after the test, it is felt that the additive plasticizes pitch, renders it less tacky as a result of its solvent action, and thereby causes the pitch in the treated pulp to be trouble-free with respect to papermaking operations. Physical characteristics of extracted pitch from treated and untreated samples of

TABLE II (*Continued*)

				Cook Liquor				Pulp Tonnage					
Cook No.	Date	Hardness Avg.	Bleach % Cl₂	% Free SO_2	% Total SO_2	Avg. Dirt Count	Bleach Shrinkage	Kamyr	Bleach	Screenings	Slush	Total	Treatment
837/44	2	28	2.82	4.30	5.27	*643	0.81	71.63	11.57	4.32	5.90	94.23	"
745/52	3	31	2.71	4.19	5.19	*643	1.14	73.59	16.28	...	4.27	95.28	"
753/59	4	31	2.74	4.17	5.15	4919	0.80	70.67	11.44	2.81	5.00	90.72	"
760/67	5	32	3.05	4.08	5.06	4887	1.07	72.25	15.33	...	5.75	94.40	"
768/75	6	...	...	4.02	5.02	....	1.04	....	14.89	...	...	15.93	"
776/80	7	33	2.68	3.81	4.80	5142	0.79	68.06	11.33	2.38	5.24	87.80	"
781/87	8	32	2.94	3.96	4.96	5140	1.12	69.38	15.96	...	6.27	92.73	"
788/97	9	29	3.55	4.19	5.15	5153	0.93	57.35	13.35	2.23	6.82	80.68	"
798/805	10	32	3.67	4.35	5.30	4919	1.01	66.05	14.47	1.38	5.31	88.22	"
806/14	11	30	3.98	4.54	5.52	5184	0.79	63.10	11.22	2.65	6.32	84.06	"
815/22	12	...	3.64	4.23	5.21	5147	1.08	65.36	15.37	...	6.03	87.84	"
823/30	13	30	...	4.48	5.48	....	0.79	57.75	11.26	2.64	...	72.44	"
831/38	14	30	3.48	4.34	5.37	*544	1.02	63.91	14.51	...	6.02	85.46	"
839/46	15	32	3.08	4.33	5.28	*516	0.68	61.80	9.73	3.32	6.44	81.97	"
847/54	16	33	3.20	4.05	5.03	*564	0.76	64.57	10.88	2.12	7.73	86.06	"
855/62	17	31	3.67	4.74	5.74	*521	1.04	68.77	14.84	2.34	6.77	93.76	"
863/72	18	28	3.63	4.59	5.54	*495	0.92	64.97	13.16	0.64	7.76	82.45	"
873/79	19	35	3.67	4.59	5.55	*576	1.13	57.91	16.07	...	6.77	81.88	"
880/86	20	...	...	4.74	5.74	....	0.82	....	11.65	2.80	...	15.27	"
887/95	21	31	3.06	4.30	5.30	*579	1.18	53.97	16.85	...	6.89	78.89	"
896/903	22	31	3.44	4.35	5.33	*462	0.75	59.28	10.72	5.14	6.61	82.50	"
904/11	23	31	3.05	3.90	4.86	*450	1.16	67.74	16.53	...	7.21	92.64	"
912/19	24	...	3.16	4.45	5.43	*472	0.77	59.72	10.95	4.46	4.61	80.51	"
920/29	25	33	3.45	4.44	5.47	*436	1.25	69.62	17.90	...	5.87	94.64	"
930/37	26	32	3.19	4.53	5.48	*464	1.11	65.44	16.27	...	7.14	89.99	"
938/44	27	30	...	4.80	5.84	....	0.69	60.07	9.91	3.75	...	74.42	"
945/53	28	35	3.29	5.06	5.97	*475	1.25	66.37	17.82	...	5.12	90.56	"
954/61	29	34	3.00	4.81	5.83	*448	0.97	61.15	13.95	3.08	5.41	84.56	"
962/70	30	32	3.35	5.16	6.22	*499	1.18	52.80	16.87	...	0.25	71.10	"
971/79	5/1/47	34	3.28	5.09	6.04	*484	0.94	61.67	13.47	2.68	1.34	80.10	"
980/89	2	31	3.57	4.96	5.89	*477	1.10	69.16	15.76	...	3.87	89.89	"
990/98	3	32	3.32	5.02	5.94	*472	0.93	68.05	13.27	3.15	6.05	91.45	0.25 gal. per ton
999/1006	4	36	...	4.81	5.83	....	1.02	66.66	14.58	2.11	...	84.37	"
1007/15	5	29	3.38	4.64	5.59	*476	1.06	60.45	15.21	1.45	6.00	84.17	"
1016/23	6	30	3.45	4.79	5.78	*465	0.99	58.51	14.20	1.44	7.03	82.17	"
1024/31	7	31	3.53	4.94	5.98	*513	1.25	57.55	17.80	...	4.60	81.20	"
1032/39	8	30	3.66	4.99	5.95	*468	0.96	60.10	13.70	2.88	7.37	85.01	"
1040/48	9	32	3.43	4.93	5.92	*494	1.13	57.00	16.10	...	5.40	79.63	0.25 gal. per ton
1049/56	10	34	3.33	5.04	6.04	*484	1.07	55.35	15.23	...	6.96	78.61	"
1057/64	11	29	...	5.10	6.06	....	1.04	49.91	14.92	...	...	65.87	"
1065/72	12	31	3.17	4.91	5.89	*487	0.74	61.28	10.54	6.18	6.15	84.89	"
1073/80	13	29	3.18	4.99	6.02	*490	1.10	59.68	15.74	...	6.67	83.49	"
1081/89	14	33	3.06	5.18	6.14	*476	0.92	62.09	13.15	...	7.89	84.05	"
1090/98	15	32	3.54	5.08	6.08	*486	0.89	63.11	12.68	4.69	7.48	88.85	"
1099/1106	16	33	3.47	5.24	6.20	*469	1.23	62.11	17.63	...	8.09	89.03	"
1107/14	17	29	3.57	5.38	6.38	*463	0.95	58.33	13.51	3.73	8.00	84.52	"
1115/23	18	30	...	5.31	6.39	....	1.24	60.94	17.73	...	...	79.91	"
1124/32	19	29	4.66	5.13	6.11	*527	0.98	64.42	13.95	0.50	4.87	84.72	"
1133/40	20	34	3.60	4.80	5.89	*470	0.79	66.74	11.29	3.62	...	82.44	"
1141/47	21	29	3.55	4.79	5.77	*527	0.91	53.69	12.93	3.19	6.05	76.77	"
1148/56	22	30	3.34	5.00	6.01	*538	0.86	40.72	12.21	...	5.10	58.89	"
1157/65	23	30	3.12	4.91	5.89	*500	0.94	62.89	13.42	2.38	6.50	86.13	"
1166/74	24	31	3.40	4.76	5.77	*484	1.23	56.83	17.50	...	6.86	82.42	"
1175/83	25	30	...	4.62	5.63	....	0.93	63.06	13.26	3.17	...	80.42	"
1184/90	26	31	3.24	4.62	5.67	*380	1.19	74.49	16.98	...	6.86	99.52	"
1191/99	27	35	3.14	4.37	5.10	*386	0.91	78.05	13.01	2.67	6.16	100.80	"
1200/08	28	33	3.46	2.02	3.19	*363	1.01	72.10	14.49	1.63	4.81	94.04	"
1209/15	29	31	3.46	4.49	5.52	*310	1.50	77.08	21.45	...	5.32	105.35	"
1216/26	30	33	3.64	4.30	5.31	*374	1.32	72.81	18.94	...	7.31	100.38	"
1227/35	31	30	3.14	4.54	5.53	*421	0.87	73.00	12.45	3.89	6.92	97.13	"
1236/45	6/1/47	35	...	4.50	5.50	....	1.36	63.74	19.41	...	...	84.51	"
1246/55	2	30	3.58	4.70	5.75	*469	1.34	68.07	19.07	...	6.92	95.40	"
1256/65	3	32	3.45	4.99	6.08	*454	1.25	68.77	17.88	...	7.58	95.48	"
1266/74	4	30	3.80	4.94	5.95	*457	0.88	66.31	12.59	3.96	7.19	90.93	"
1275/85	5	33	3.63	4.76	5.78	*448	1.23	67.72	17.50	0.31	6.45	93.21	"
1286/94	6	29	3.21	4.75	5.79	*451	1.19	78.89	16.94	...	6.32	103.34	"
1295/1301	7	28	3.03	4.75	5.74	*457	1.24	76.23	17.76	...	6.92	102.15	"
1302/08	8	27	...	4.38	5.42	*501	0.97	38.21	13.78	4.25	...	57.21	"
1309/18	9	...	3.53	4.90	5.97	*434	1.26	66.06	17.95	...	2.85	88.12	"
1319/27	10	31	3.21	5.03	5.95	*441	1.29	62.37	18.40	...	5.74	87.80	"
1328/36	11	30	3.26	4.59	5.62	....	1.26	68.37	18.01	...	...	87.64	0.25 gal. per ton
1337/46	12	27	2.66	4.32	5.44	*446	1.30	70.16	18.59	...	...	90.05	"
1347/54	13	30	3.65	4.64	5.66	*454	0.93	70.22	13.24	3.04	2.88	90.31	"
1355/64	14	30	3.36	4.64	5.66	*449	1.21	62.06	17.27	...	6.78	86.22	"
1365/73	15	31	...	4.70	5.70	*455	1.21	64.34	17.26	...	...	82.81	"

* Revised Dirt Count Method.

pulp which support this contention are given in Table No. III.

Pertinent data relative to increased rate of acid penetration are indicated by the cook time—SO_2 relationship shown in Fig. 1. It might be stated that the data used have been taken from the mill records and represent average values in an attempt to minimize fluctuations encountered as a result of such local operating variables as changes in the acid strength and differences in pulpwood.

Progress of the cook is, of course, determined by measurement of the free SO_2 and it will be noted that, in general, the slope of the curves (each line is an average of eight cooks, i.e., one complete digester cycle) indicates a faster cook when the processing aid is employed. This observation has been borne out over the entire test time.

It might also be pointed out that the same general effect is evident for a short period after discontinuing the use of the treatment. This is an indication of residual effect, due to build-up in the acid system and as might be expected, by analogy, a short period of time is necessary after the processing aid is added before any effects are noted.

By reference to Table II, it is evident that there are no pronounced fluctuations in cook time, except for the period, November 20th to December 8th. Repair work was carried out during this period and cook time data covering this interval are therefore not representative.

In the period from December 8th to December 28th, during which 0.25 gallons of agent per ton chips were added, there is a general leveling off of the cook time which further flattens out with continued use of the digester aid. This trend continues through January 27th. The use of the emulsion was stopped January 22nd, according to prearranged plans, but effect of the carryover period is apparent. In the absence of treatment, cook times again became irregular with a tendency toward an increased digestion period. On February 17th, treatment was again resumed using 0.50 gallons per ton of chips. However, the effect did not begin to manifest itself until February 20th, when the time cycles become more regular. It is apparent that some time is required to saturate the system. This leveling off continues until March 1st, which is a short time after treatment was again stopped, whereupon the cook times again become more erratic. During the period March to June, the same general pattern can be observed, namely, erratic cooking without the assist and a leveling off and shortened cycle with the product. The average cooking time drops in this period from approximately 14 hours to 12.5 hours.

No adverse effects on yield were reported from the shorter time cycle. Increased production was considerable, in the order of 5 to 10%.

Mill operating data for the past several years indicate that it has been necessary to spend 8 to 12 hours every 2 to 3 weeks for cleaning the system. Screen capacity being a limiting factor, this has resulted in a production loss of 3 to 5 tons of pulp per hour of shutdown time or an average loss of 50 tons per shutdown. It has been shown that by using the additive continously, the period between shutdowns can be greatly lengthened. During the test period, the interval between shutdown was extended to an average of 10 weeks and it may be of interest to point out that increased production as a result of this effect alone amply justified use of the treatment. A credit may also be allowed for labor saving as a result of decreased down time.

As a result of better screening conditions, it is to be expected that the amount of tailings would be somewhat less, since clean screens obviously pass more fiber than those which are partially filled with pitchy and or slime deposits. The knot rejects from the treated pulp were slightly softer and contained less entrapped fiber as a result of the effect of the emulsion in the digestion process.

At the mill conducting the test, it had been the practice to use a proprietary compound of the chlorinated phenol type in the pulp system for bacteria and slime control. It was found that after continued use of the agent, this could be eliminated without harmful results in the winter months and cut down considerably, even in late spring when the water had warmed up. It is believed that slime is greatly reduced by elimination of tacky materials such as pitchy constituents which act as binders. It has been suggested that the hydrocarbon constituent of the assist may have a bactericidal action due to its highly aromatic nature, but this has not been established.

Pitch troubles materially decreased when treated pulp was used for the furnish of the paper machines operated by the test mill. For example, after running treated pulp, it was found during the usual weekly inspections of the fourdrinier section that very little pitch had been deposited on the leading edges of the suction box covers, inside wire rolls, and doctors. The papermakers attributed the improvement to a better grade of pulp, inasmuch as they were unaware of the test being conducted at the pulp mill. It is particularly significant to add that they were able to tell each time the test was discontinued and resumed.

Action of Digestor Assist

From the observations made, a theory is advanced herewith on the manner in which the addition agent functions in the pulping operation. The solvent oil in its emulsified state is capable of mixing intimately with the cook liquor, insuring good dispersion. Based on observation of cook liquor samples, the emulsion breaks as the cook continues giving a dispersed oil phase and an aqueous phase in which the chips are located. This type of system is generally recognized to be the most efficient for extracting an oil-soluble material (in this case, the pitch) from the aqueous phase. The end-products of the cook contain considerable amounts of ligno-sulphonic materials which are capable of functioning as emulsifiers, and a one-phase system again results as the cook is completed. Depending upon washing efficiency, this makes it possible to remove a percentage of the pitch-oil solution with the wash water. When the assist was used, the blow-down liquors were noticeably darker in color and of slightly higher specific gravity, indicating a greater percentage of pitchy-lignin complexes had been removed.

Conclusions

The results of the extensive plant scale test of the processing aid made over a period of approximately 1 year in Mitscherlich wood pulping operations indicate several advantages which may be derived from the use of the product. These include a shorter cook, control of pitch, improved screening, and more uniform fiber characteristics, all of which are reflected in improved economy of operation of both the pulp and paper mill.

Certain additional factors have been reported in this particular mill and are of interest, although of lesser direct value. These include: increase in initial brightness

of pulp, lowered bleach requirements, and less foaming in the pulp mill system.

It might be pointed out that certain initial work, including a combination of the processing agent with an inert filler, laboratory determinations of extractable matter, etc. are not covered in this report. Subsequent work indicated that these data were irrelevant.

The conclusions in this report are based entirely on acid pulping by the Mitscherlich process, which is essentially a slow cook using indirect steam. There are few mills of this type remaining in the country; most sulphite installations are of the quick cook type wherein direct steam is employed and provision is made for circulation of the digestion liquor during the cook cycle. This work has subsequently been extended to several mills of this type, and although data are not yet available, information received indicates that the effects described for the slow cook system are duplicated. It is hoped a report on this type of sulphite mill operation may be covered in detail at a later date.

Composition Changes Occurring During Vacuum Evaporation, Steam Stripping, and Deashing of Ammonium Sulphite Waste Liquors*

By Aaron E. Markham[1] and Joseph L. McCarthy[2]

Abstract

By vacuum evaporation of ammonium sulphite waste liquor, no nitrogen is removed but it is found that some nitrogen is present in the liquor combined in such a manner that it is not readily released by boiling under mildly alkaline conditions; some calcium sulphate crystallized out during evaporation of the samples used. Steam stripping of ammonium sulphite waste liquors proceeds more slowly than is the case with calcium liquors and leads to a marked reduction in "loosely combined sulphur dioxide," a decrease in acidity, and substantially no change in reducing sugar concentration. By deashing, nearly all the ammonium or calcium ions present in sulphite waste liquor can be replaced with hydrogen ions.

One phase in the development of methods for the utilization of sulphite waste liquor is the acquisition of information describing the changes in composition which sulphite waste liquor undergoes when it is subjected to various processing steps.

In this paper some information of this type is reported for laboratory prepared samples of ammonium sulphite waste liquor and for a commercial calcium sulphite waste liquor. The usually greater solubility of ammonium salts compared to those of calcium and also the operation of commercial scale ammonium base sulphite pulp mills in the United States *(1)* and in Norway *(2)* suggests interest in the processing of ammonium sulphite waste liquor.

The process step of vacuum evaporation of ammonium sulphite waste liquor to a concentrated syrup suitable for burning or for other purposes was investigated. The steam stripping of ammonium sulphite waste liquor was also studied since this process step has been found to be of value for accomplishing preparation of sulphite waste liquors for action of microorganisms and at the same time for recovering sulphur dioxide which may be reused *(3, 4, 5)*.

The third process step investigated was that of replacement by hydrogen ions of the calcium or ammonium and other cations in sulphite waste liquor. Because of the mobile equilibria controlling partition of cations between anions in aqueous solution and anionic groupings of commercially available base exchange resins, it is readily possible to replace substantially completely the calcium, ammonium or other cations in sulphite waste liquor by hydrogen or another cation donated by the resin.

The investigation in general consisted of carrying out an analysis of the starting liquor, subjecting the liquor to a processing step, and then analyzing the product liquor.

Experimental

MATERIALS:

Ammonium sulphite waste liquors A, B and C were prepared, using Western hemlock *(Tsuga heterophylla)* chips in a 50-liter stainless steel digester in the Chemical Engineering laboratories at the University of Washington. Composition of ammonium bisulphite pulping liquors and pulping schedules were varied for the three preparations. Analyses of these ammonium sulphite waste liquors are stated in Table I.

Calcium sulphite waste liquor was secured from a commercial source, making paper grade pulp using about 85% Western hemlock and 15% white fir. Analysis of this liquor is given in Table III.

PROCESS STEPS:

Vacuum evaporation of all samples was carried out in glass apparatus under about 20 mm. Hg pressure and at a temperature between 30 and 40° C. All samples were evaporated to a concentration of about 50% total solids.

The steam stripping operation was simulated by steam distillation of the liquors at atmospheric pressure in a 12-liter Pyrex flask. Steam was passed through the sulphite waste liquor at its boiling point (about 100° C.) while the liquor was being heated externally to

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

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maintain substantialy constant volume. The volume of condensed vapor was measured and the condensate was titrated periodically with alkali and with iodine to determine the rate of sulphur dioxide removal. On completion of the operation the sulphite waste liquor was made up to its original weight by the addition of water.

The cation exchange treatment was conducted at room temperature (20 to 25° C.) using a wood pipe column 15 cm. in diameter, filled to a depth of 41.5 cm. with Ionex No. 2 (Dow Chemical Co.). The resin was regenerated with 4% hydrochloric acid and washed with water until free of chloride ion. The sulphite waste liquor was then passed through the column at a rate of about 1 liter per minute.

ANALYTICAL METHODS:

Methoxyl was determined by the method of E. P. Clark *(6)*.

"Total" ammonia analyses were secured by the usual Kjeldahl procedure.

"Free" ammonia was evaluated by distilling the ammonia from a sample, made alkaline with sodium hydroxide, exactly as in the latter part of the Kjeldahl procedure.

Calcium oxide was determined on a dried sample by ashing in a muffle furnace, dissolving the ash, separating the iron, precipitating the calcium as oxalate, and analyzing for oxalate in the precipitate by ceric sulphate titration.

"Free" and "Loosely combined" sulphur dioxide and *ash* tests were carried out by the T.A.P.P.I. Standard Method *(7)*.

Sulphate was determined by a modification of the method of Doering *(8)*. (The conductometric titration method of Peniston, Felicetta, and McCarthy, *(9)* had not yet been developed.)

Total sulphur analyses were obtained by F. H. Yorston's method *(10)*.

Reducing substances were determined by use of a modification of the Munson-Walker method *(11)*.

Total Solids in calcium sulphite waste liquor were evaluated by drying of a 10 ml. sample overnight at 105° C. The content of total solids in ammonium sulphite waste liquors was determined by the drying of a 10 ml. sample, dispersed through crushed quartz, for 24 hours in an oven at 60° C. under a pressure of about 20 mm. Hg.

Discussion

Vacuum evaporation of ammonium sulphite waste liquors brought about the changes in composition shown in Table I which gives the actual analytical results obtained for the three initial samples together with the percentage of the analytically determined constituent remaining after completion of the evaporation. Material balances for these calculations were obtained by assuming that no loss or gain in methoxyl groups occurred during the operation. That this assumption is a valid basis for a material balance follows from the manner in which methoxyl was determined, i.e. in this analysis the liquor sample was evaporated to dryness prior to treatment with hydriodic acid so that only nonvolatile methoxyl was measured.

TABLE I.—COMPOSITION CHANGES RESULTING FROM VACUUM EVAPORATION OF THREE AMMONIUM SULPHITE WASTE LIQUORS

Analytical Characteristics	Sample A Initial, g./l.	Sample A Final, % of initial	Sample B Initial, g./l.	Sample B Final, % of initial	Sample C Initial, g./l.	Sample C Final, % of initial
Methoxyl, as OCH_3	8.07	100	9.05	100	7.50	100
Kjeldahl nitrogen, as NH_3	4.90	100	4.55	102	2.37	97
"Free ammonia," as NH_3	3.40	134	4.35	100	2.37	45
Calcium, as CaO	0.40	38	0.42	57	0.36	94
"Free SO_2," as S	0.079	61	0.030	77	1.14	3
"Loosely combined SO_2," as S	1.56	71	1.60	72	1.81	46
Sulphate, as S	1.20	102	0.76	92	0.61	95
Total sulphur as S	9.46	89	8.66	95	8.15	68
Reducing substances, as glucose	26.8	96	29.6	103	28.1	93
Total solids	120	98	130.5	100	100.8	97
pH	1.91	...	2.10	...	1.34	...

The compositions (Table I) of the initial samples A and B were similar in most respects although B contained somewhat less sulphur and ammonia on a total solids basis. Sample C, which was prepared using a pulping liquor very low in "combined" sulphur dioxide, showed higher concentrations of "free" and "loosely combined" sulphur dioxide and lower concentrations of ammonia than were found in the other two samples.

TABLE II.—COMPOSITION CHANGES IN TWO AMMONIUM SULPHITE WASTE LIQUORS RESULTNIG FROM STEAM STRIPPING, THEN VACUUM EVAPORATION

Analytical Characteristics	Sample B Initial, g./l.	Sample B After S.S.,[1] % of initial	Sample B After S.S. then V.E.,[1] % of initial	Sample C Initial, g./l.	Sample C After S.S., % of initial	Sample C After S.S. then V.E., % of initial
Methoxyl, as OCH_3	9.05	100	100	7.50	100	100
Kjeldahl nitrogen, as NH_3	4.55	100	103	2.37	98	98
"Free ammonia," as NH_3	4.35	93	93	2.37	91	89
Calcium, as CaO	0.42	98	79	0.36	81	39
"Free SO_2," as S	0.030	378	143	1.14	0	2
"Loosely combined SO_2," as S	1.60	20	19	1.81	10	5
Sulphate, as S	0.76	99	109	0.61	101	87
Total sulphur, as S	8.66	82	82	8.15	54	51
Reducing substances as glucose	29.6	96	96	28.1	97	93
Total solids	130.5	91	83	100.8	97	93
pH	2.10	3.96	..	1.34	2.20	..

[1] "S.S." = steam stripping; "V.E." = vacuum evaporation.

It is of interest that vacuum evaporation resulted in no removal of Kjeldahl nitrogen from any of the samples. However, by the differences between Kjeldahl nitrogen and free ammonia data it is indicated that where a high concentration of ammonia relative to

TABLE III.—COMPOSITION CHANGES IN AMMONIUM AND CALCIUM SULPHITE WASTE LIQUORS RESULTING FROM DEASHING; THEN STEAM STRIPPING; THEN VACUUM EVAPORATION

Analytical Characteristics	Sample C (NH_4 Base) Initial, g./l.	After Deashing, % of initial	After DA[1] then S.S.,[1] % of initial	After DA[1] then S.S.[1] then V.E.,[1] % of initial	Sample D (Ca Base) Initial, g./l.	After Deashing, % of initial	After DA then S.S., % of initial	After DA then S.S. then V.E., % of initial
Methoxyl, as OCH_3	7.50	100	100	100	10.92	100	100	100
Kjeldahl nitrogen, as NH_3	2.37	4	5	5	....	...	...	...
"Free ammonia," as NH_3	2.37	2	4	2	....	...	...	...
Calcium, as CaO	0.36	0	0	0	9.02	0.0	0.0	0.0
Ash	3.58	10	17	7	12.6	0.6	1.0	0.5
"Free SO_2," as S	1.14	3	2	4	0.085	500	318	121
"Loosely combined SO_2," as S	1.81	69	4	2	2.01	75	16	10
Sulphate, as S	0.61	116	127	63	0.46	146	146	153
Total sulphur, as S	8.15	77	51	49	9.67	93	73	71
Reducing substances as glucose	28.0	94	92	88	21.0	119	159	111
Total solids	100.8	88	84	83	134.7	83	78	74
pH	1.34	1.00	..	..	2.4	1.3	....	...

[1] "D.A." = deashing; "S.S." = steam stripping; "V.E." = vacuum evaporation.

sulphurous acid is used in pulping liquors, a portion of the nitrogen in the waste liquors occurs in a state not readily released by boiling under mildly alkaline conditions. With sample C all nitrogen was apparently present as "free" ammonia prior to vacuum evaporation. The authors are not as yet able to explain the changes in the "free" ammonia content of the samples observed during vacuum evaporation.

The concentration of calcium ion present in the initial samples was found to be substantially constant and considerably higher than expected. Analyses of the wood chips (prepared from salt-water borne logs) showed that they contained about 1.2 grams CaO per dry kilogram. Since 29 liters of pulping liquor was used with 7.4 kilograms of chips, a concentration of about 0.3 grams of CaO per liter of the liquor could be traced to calcium in the chips.

It is also of interest that a substantial decrease in calcium concentration occurred during evaporation of samples A and E and this decrease was confirmed by the appearance of calcium sulphate crystals. Since the concentrations of sulphate ion remained almost constant during evaporation, the rate of conversion of other sulphur-containing substances to sulphate was nearly balanced by the rate of calcium sulphate crystallization. This phenomenon has also been observed in connection with other work carried out in these laboratories *(9)*. The removal from solution of solid calcium sulphate and of "loosely combined sulphur dioxide" brought about a decrease in the total sulphur contained in the solution to an extent which was most marked in the most acidic sample C.

In Table II data are presented showing composition changes brought about by simulated steam stripping, then vacuum evaporating ammonium sulphite waste liquor samples B and C. Steam stripping of ammonium liquors proceeds more slowly than does stripping of calcium liquor of equivalent base content. Here also there was no vaporization of ammonia, but alteration in the ease of liberation of a part of the nitrogen by steam stripping is indicated. Both samples showed some decrease in calcium content during stripping and to a greater extent in the evaporation step, probably as a result of calcium sulphate precipitation.

The most significant change brought about by the steam stripping is to be found in the marked reduction which occurred in the concentration of substances "loosely combined" with sulphur dioxide. Removal from the liquors of sulphur dioxide bound in these substances gave rise to the considerable decrease observed in total sulphur concentration and in acidity. The concentration of sugars present, as approximated by the figures given for "reducing substances," remained unchanged.

In Table III changes in composition are shown for ammonium sulphite waste liquor sample C and for calcium base sample D when each was subjected successively to the process steps of deashing, steam stripping, and vacuum evaporation. The deashing treatment removed completely the calcium ions, and removed almost completely the nitrogen and the ash from both samples. It is thus indicated that almost all of the nitrogen in sample C occurs in a readily exchangeable cationic state, i.e. as ammonium ion. However, the exchange of ammonium ions for hydrogen ions does not proceed to completion as readily as does the exchange of calcium ions. The residual ash in both samples probably resulted from the presence of alkali metals which show a behaviour similar to that of ammonia on cation exchange resins.

Deashing, of course, considerably increased the hydrogen ion concentration in the samples which fostered liberation of sulphur dioxide and thus decreased the total sulphur concentration during deashing and subsequent steam stripping. The higher degree of removal of "loosely combined sulphur dioxide" indicated for the ammonium sample C was brought about by a longer time of steam stripping than was used with calcium sample D. Increase in "reducing substances" on steam stripping of sample D appears to show liberation by this treatment of groupings in the sulphite waste liquor capable of reducing copper, presumably carbonyl groupings. Other changes in composition were as expected from previously discussed results.

The assistance of Vincent F. Felicetta and of Miss Anna Mae Timbers in carrying out analyses is gratefully acknowledged by the authors.

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TAPPI Notes

The TAPPI Maine-New Hampshire Section will meet at the Belgrade Lake House, Belgrade, Me., on June 25-26. General theme of the meeting will be "Microbiology in the Manufacture of Pulp and Paper." An unusually fine technical program is being prepared, together with a fishing derby, golf tournament, entertainment, etc. Reservations should be made direct with the Belgrade Lake House, Belgrade, Me. The hotel may be reached by train to Belgrade Depot (M. C. R. R.) or by Northeast Airlines to Augusta. Guests of the hotel will be met at Waterville, Belgrade Depot, or Augusta when the hotel is notified in advance.

The TAPPI Kalamazoo Valley Section will hold its annual "Fun Day" on Tuesday, June 22, golf will begin at 1:00 p. m. Dinner at 7:00 p. m. at the Gull Lake Country club, following which the golf prizes will be distributed. D. Militzer is general chairman.

R. L. Snideman, of the American Coating Mills, has been transferred from Elkhart, Ind., to 141 West Jackson Boulevard, Chicago.

Arthur R. Ingham, formerly of the Empire Box Co., is now plant manager, Kupfer Bros., Northbridge, Mass.

John D. Pollard, formerly of Stamford Research Laboratories, is now group leader of research, U. S. Industrial Chemicals, Curtis Bay Division, Baltimore, Md.

Philip E. Shick, formerly of the West Virginia Pulp & Paper Co., is now in the research and development department of the Mead Corp., Chillicothe, Ohio.

Henry Z. Mohrer, formerly of the U. S. Gypsum Co., is now with the Federal Paper Board Co., Inc., Bogota, N. J.

Harold E. Ingalls has succeeded F. B. Schilling as official representative of Nichols Engineering & Research Corp.

W. F. Eldridge has succeeded J. M. Booth as official representatives of the Huron Milling Co.